# Railroad Age Gazette

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The two bills passed last week by the House of Representatives relating to safety on railways were briefly noticed in our issue of the 17th. According to the New York *Journal of Commerce*, the discussion on these measures was dull and perfunctory, the Congressmen taking only a comparatively slight interest in them. There is good reason why the House should not spend time debating these bills, for they were passed in the last Congress, and now are being passed again simply because the Senate neglected them, thus rendering a new start necessary. Another good reason for passing them without debate is that nobody has raised serious objection to them. What little debate there was in the House dealt only with lawyers' trifling technicalities. The only features in the accident bill which will materially modify the law as it now stands are (1) making all accident reports monthly and abolishing the yearly report, which is useless; and (2) empowering the commission to investigate. The first will save work for the railways and simplify the records for the public. This relief would have been granted a year ago but for the dilatory tactics of the Senate. No public spirited railway officer objects to the second, for impartial public investigations of accidents will promote safety, as they have done in England. The bill authorizing the Interstate Commerce Commission to prescribe standard and uniform locations for grab irons, steps, etc., is in line with the best efforts of the Master Car Builders' Association. Efficient hand brakes become important as the use of hump yards becomes more general."

If anyone has doubts about the practicability and desirability of telephones for use in train despatching and block signal work, he will be interested in the statement, which has been made by an officer of the conservative Pennsylvania Railroad, that in about a month from now the main line of that road between Altoona and Philadelphia—probably the busiest line of road of equal length in the country—is to be equipped with telephone circuits for train despatching, for block signaling and for local message work. For block signaling purposes there will be a separate telephone circuit between each two offices. Selectors will be used, but on short lines on which there are not more than four or five offices, bells will be used in the ordinary way. For messages to be transmitted long distances, as from the headquarters of one division to that of another, the telegraph will be used. It is scarcely necessary to say that this is no hasty decision; the Pennsylvania has used telephones on its less important lines for several years. On the Cresson division the telephone is the exclusive means of electrical communication, and it is used by the train despatcher between Altoona and Petersburg and between Downingtown and Philadelphia. The new line from the Susquehanna river eastward (used exclusively for freight) is operated wholly by telephone, as is the Trenton cut-off. Officers of the Pennsylvania, like other railway officers who have had extended experience with telephones, testify to their value as a means of facilitating the operation of the road. By February about 500 miles of the company's lines will have telephones.

*The Springfield Republican* summarizes President Taft's latest informal manifesto thus: "President Taft, it is reported, will recommend to Congress the creation of a separate interstate commerce court of five judges; a law giving the commission initial power in bringing complaints or taking action in respect to rates and classifications; one to place interstate roads under national supervision in respect to stock and bond issues, and one to 'prohibit any interstate railroad company holding or acquiring stock in any competing railroad;' * * * Why deal with the roads as monopolies and then try to recognize them as not monopolies? The President will, it is said, further advise the legalization of traffic agreements between different roads under the supervision of the commission. With one hand, therefore, he would strike down railroad combinations and with the other permit it to live. This would be the height of inconsistency."—But if the President waits until he can be entirely consistent he will not get anywhere, probably. The railway problem is so prodigious that halfway measures may be not only justifiable but necessary. Experience has shown that traffic agreements between railways are not very powerful instruments of combination, even when they were made by the roads as they pleased, without governmental supervision or restraint. Designed to prevent unnecessary competition, they have by no means stopped the stream of waste, only dammed it temporarily here and there. Moreover, a traffic agreement, even a loose one, is quite likely to remove one of the principal incentives for acquiring competing lines. Perhaps the president has in mind the probability of getting one of these two measures passed without the other. The proposal to forbid buying up a rival is comparatively new, but that to permit traffic agreements has been discussed for the last four years without any very definite or forcible protest from any important interest; and it may be practicable to pass it this winter. It ought to be passed, if for no other reason than to "save the face" of the department of justice, for under the absurd provisions of the Sherman law it is illegal for two traffic officers to hold a friendly conference of half an hour, if their talk tends to moderate the severity of their competition; and the government is guilty, every day, of neglecting to apply the law to traffic men who, in all parts of the country, are reported in the newspapers as meeting together to regulate rates.

A well-known railway man, giving a fee to a restaurant waiter who had been conspicuously inefficient, was remonstrated with by one of his guests, and asked why he gave it: because I am a moral coward, replied the victim. Having in mind this truthful explanation, we wish to speak a word in defense of certain passengers on dining cars, who at a recent meeting of the Association of Dining Car Superintendents, were characterized by one of the members as lacking in brains. This superintendent is quoted as saying:

"Speaking of tips, the majority of those who eat in dining cars, eat about one or two meals on a train each year. Many of them have more money than brains, and are perfectly able to pay a tip and would do so whether the company ruled against it or not. Any discussion of the subject or any attempt at such rules will only put our business in a turmoil. The tip question has become a nuisance because many travelers lack the courage to offer a fee on a 10 per cent. scale, such as is generally adopted in European countries. They prefer to give a tip of more generous proportions rather than face the disapproving look of a negro waiter." Lack of brains is, we submit, a wrong diagnosis, at least in the great majority of cases. But why the moral cowardice? In many cases the trouble, no doubt, is worse than that; it is moral dishonesty. The passenger is using his employer's money and does not exercise the care that he would with his own money. Again, perhaps a higher rate than 10 per cent. is appropriate on dining cars. If the service is satisfactory, or nearly so, it is safe to say that the waiter is of a higher grade than one could find at a hotel charging the same prices for meals; it is necessary to get this higher grade, if the exacting duties of the dining car are to be properly performed. A higher grade of waiter may appropriately receive a larger fee. Moreover, the railways are constantly giving meals in dining cars which ought to be priced 50 per cent. higher than they are, if cost is considered; so that 10 per cent. on the price is not the same as 10 per cent. on the value. This works to the disadvantage of the waiter. The two inexorable facts of the tip question appear to be (1) that there is no way to change the habits of the considerable number of customers who give tips freely and voluntarily, and (2) that many deem it right to pay only the lowest respectable amount, while some others would pay none at all, except by the compulsion of custom. The fact that tips will be paid, and will vary in amount would seem to leave the dining car superintendent no choice but to do his best to make his waiters practice the ordinary civility of always expressing thanks, regardless of the amount of the gift—as the best waiters always do. This is the only workable rule. The passenger can, of course, ignore the "disapproving look"; but he should not be required to do so, if the dining car manager can correct his waiters' behavior, for such incidents impair digestion, and thus may damage the reputation of the kitchen!

## NEW VAGARIES OF RAILWAY "RIGHTS."

Several months ago we outlined as the probable feature of new railway capitalization to make good the financial halt of the panic period, the issue of new stock rather than bonds. The forecast has already been verified beyond expectation. Four great dividend-paying roads, each with the highest credit and with stock much above par in the market—New York Central, Canadian Pacific, Pennsylvania and New Haven—have issued new stock in considerable volume and, of course, with the so-called "rights" annexed for old shareholders. The example of these great companies is pretty sure to be followed by others during the coming year. We are, in fact, apparently in an epoch of "rights" of which the hundreds of thousands sold during the last few weeks represent the initial stage. Nor is the magnitude of those sales to be measured by those scheduled in the regular stock reports. Probably in a ratio of not less than two to one railway rights are handled at private sale and never reach the reading eye of the investor.

The railway right has always been a thing of vagaries and revealing curious phenomena. In earlier times the rumor of coming rights of a conservative and prosperous railway always sent the stock bounding upward. If the rumor was realized and the rights came the stock maintained itself well and did not fall except in the natural ratio when the rights expired. The last panic period introduced us to a new phase of the matter. The rumor of rights to come invariably sent the stock down—in one case so fast and far that an officially announced plan had to be radically changed. During the last few weeks we have had hybrid phenomena. The report of coming rights at first sent the affected stock moderately upward; the realization has dropped the stock to an amount considerably below the market value of the rights when in hand. Stockholders rejoicing in the "right" as being a kind of extra dividend have been a bit chagrined at finding that, measured by the value of their stock holdings, they have been worse off than if no rights had come to them. Nor have their stocks shown much capacity for quick rebound when the rights have expired. The natural and probably well-founded inference is that the up-to-date railway right as distinguished from the old-fashioned right is become speculative—not speculative in itself, which, in the case of a prosperous railway, is far from being the case—but a security extensively dealt in by speculators and used often for a "turn," instead of for an investment up to the date of expiration, when, obviously, it reduces more nearly to an investment basis. Pointing in the same speculative direction is the large commission charged on rights in proportion to actual value and as compared with the value of shares. And, beyond, there rises the broader and somewhat more academic question as to the speculative results of the issue of a great volume of rights at a time when high costs of living have forced a large number of small stockholders, with no surplus over income, to sell rights rather than take them up.

Stockholders holding rights under these conditions divide roughly into four groups: (1) Stock owners, including most of the large shareholders, who take up their rights in any case and ignore the vagaries of the market. (2) Stockholders who sell instantly under the theory of coming stock depression to be reflected in the lower price of rights. (3) Stockholders who wait until the last day under the theory of a reaction upward, and (4) a class represented by the opportunist stockholder who sells—or buys—at some point intermediate between the birth and death of the right. Among four such groups it is hardly strange that the railway right suffers singular perturbations.

Turning from the railway shareholder to the railway corporation meditating an issue of rights—which, for practical purposes may be regarded as "small" shares with limited life—that corporation fronts complexities under the new conditions. Generally speaking the hope of the corporation is that shareholders will take up their rights and the old body of loyal stockholders be retained. Just here come in the questions of method. How large shall be the margin between the market value and the price of issue? Shall the issue be on the installment plan or the paid-up plan or with an option on either plan? There are shareholders who always want to pay up in full. There are other shareholders who cannot pay up in full but who can pay by installment. The first plan is much the simpler but involves an immediate increase of the dividend requirement. The second plan is complicated, involves computations of interest often perplexing to the shareholder and with part paid shares circulating in a changeable market; and the "optional" payment, in whole or part, opens itself to the same objection. Through the whole "right" period—and longer in the case of part-paid stock—runs also the fluctuating ratio between the "little" stock and full stock,

disturbing market values and opening a new field of speculation. Disparities of price between two sets of securities each representing stock make an attractive lure not only for the speculator but the watchful investor. For an example, in the case of one of the great railway companies lately issuing new stock there was at one time a difference of six or seven points in relative price of stock and rights. Of course the shrewd shareholder sold his shares and bought rights. And the same process is perfectly feasible, in fact certain, in the case of part-paid shares.

Saying nothing therefore of the opportunity afforded to outside interests to acquire large new holdings through the medium of rights the issuing railway corporation faces vexing complications in the vagaries of value created largely through speculation. The company is sure of its money; but, intermediately, it encounters an unpleasant disturbance of values—an unpleasantness in which the stockholder is likely to share. In the case of a single railway corporation the subject would not rise to great financial importance. It is otherwise when many great railway companies simultaneously or at short intervals apart enter the market with rights held by a vast army of stockholders and the rights take on new vagaries of speculation. No complete remedy for the conservative railway corporation that seeks to treat each shareholder equitably is in sight. But, on the whole, the best of two alternatives rests on the theory of compulsory full payment for new stock at the expiration of the right. The increased dividend requirement and slight injustice to a fraction of the stockholders not apt to be large numerically and still smaller in stock ownership are offset by simplicity, by the early finality that makes the outstanding stock homogeneous and minimizes the area of vagary and of speculative influence. In that direction of full-paid rather than part-paid stock, it seems probable that future issues of new railway shares will trend.

## LIMITED SPEED OF PASSENGER LOCOMOTIVES.

It has been a surprise and disappointment to many motive power officers that their best efforts in building locomotives for fast speed express service have not produced an engine which will haul a train of five or six modern cars at speeds much above 60 miles an hour, and at 80 and 90 miles an hour the largest engines with boilers having a heating surface of 3,500 to 4,000 sq. ft. are scarcely able to propel themselves. The principal limitation of the steam locomotive at high speed is in the horsepower of the cylinders rather than the boiler. The efficiency of the heating surface in locomotive boilers is such that ½ h.p. should be expected per square foot of heating surface, and 4,000 sq. ft. would equal 2,000 h.p., or an equivalent tractive effort at 100 miles per hour of 7,500 lbs. The principal resistance at this speed is from air pressure at the front end, and the most trustworthy formula for determining the amount of this pressure is that derived from the Berlin-Zossen tests: $P = .0027\ V^2$, where P = resistance in pounds per square foot of exposed area at the front end; V = velocity in miles per hour, and C = .0027, the coefficient. The head end resistance of a large passenger engine at 100 miles per hour, calculated by this formula, is about 3,500 lbs. The internal friction of the engine, including the axles and flanges of the coupled wheels is about 1,000 lbs., and the flange and rolling resistance of the engine and tender truck wheels is 2,000 lbs., making a total of 6,500 lbs. An Atlantic locomotive having 3,500 sq. ft. of heating surface would have just sufficient boiler horsepower to furnish steam to propel itself on a level at this speed, and a Pacific locomotive having 4,000 sq. ft. of heating surface would have a margin of horsepower equivalent to only 1,000 lbs. tractive effort for useful work in hauling a train. At the moderate figure of 18 lbs. per ton for rolling and flange resistance of a trailing car this would equal one car weighing 55 tons.

With the present standard design for steam locomotives 100 miles per hour can be taken as the maximum limit for useful work so far as the boiler is concerned. For the engine the limitation is far below this and is 70 to 80 miles per hour, due principally to the valve and valve gear which at such speeds allow but a small volume of steam into the cylinder and produce high back pressure in its escape through the exhaust nozzle. The indicator card is very narrow and the mean effective pressure low. The rotary valves on the Corliss principle which are now in use on a number of locomotives on a western road have some advantage over the slide valve at high speeds. They have a double port opening and quicker admission, closing and exhaust, which should produce a fuller card at the higher speeds we are considering.

As the boiler can produce more steam than the valve can properly distribute at high speeds, a variable exhaust should be of advantage, as the opening could be enlarged and the back pressure due to friction through the nozzle reduced. The four-cylinder locomotives, either simple or compound, should have some advantage for high speed work not only on account of their being balanced but because the large cylinder volume and port area should produce a higher mean effective pressure. The balance compounds built in this country have only one valve for two cylinders, and the best distribution of the steam for high and low pressure cylinders cannot be obtained as well as in those four-cylinder engines where there is a separate valve gear for each cylinder. The French locomotives of the de Glehn type which are so arranged have developed 1,450 indicated h.p. at 77 miles per hour. The four-cylinder simple locomotive recently built for the Rock Island should have some advantage for high speed work although there is only one valve for two cylinders, but it can be set for the most advantageous distribution for both cylinders. A simple four-cylinder engine is also well adapted to high speed work, due to the fact that the steam enters all the cylinders at high pressure and therefore at high velocity and should produce a much higher mean effective pressure at a given speed than where compound cylinders are used. The new three-cylinder simple locomotive on the Reading has each cylinder supplied with its own piston valve, the two outer ones being actuated by the Walschaerts valve gear and the inner ones by the Joy valve gear. This arrangement is also favorable for high speed work, as there is provided large port area, large cylinder volume and high steam velocity to each cylinder. The engine has hauled a train weighing 300 tons at a speed of 90 miles per hour for a short distance, but only attained this speed on a slightly falling gradient.

As over 50 per cent. of train resistance at high speeds is due to head end pressure, some attention should be given to means for its reduction where high velocities are to be dealt with. The Berlin-Zossen tests, which were conducted at speeds up to 124 miles per hour, demonstrated that beaks or pointed shapes at the front of the engine would reduce the resistance 10 to 12 per cent. at 100 miles per hour.

We have indicated some of the desirable features of high speed locomotives and some means by which they may be improved, but nothing has thus far been devised which will enable such locomotives to haul ordinary express trains on a continuous schedule exceeding 65 or 70 miles per hour, while it has been clearly demonstrated that continuous electric traction is possible at 100 miles per hour. It has also been frequently demonstrated that the danger of derailment from irregularities in the track increases with increase of speed. For this reason the speed of most express trains is limited as much by track conditions as by the horsepower of the locomotive, and it is common practice to reduce speed on approaching curves of more than ordinary degree. On account of this requirement, it is desirable to run fast on tangents in order to make the average speed approach a fairly high speed schedule. There are few lines where the tangents are of sufficient length to run at very high speed more than a few

minutes, but where there are such tracks and very high speed is desirable it might be possible to have an auxiliary cylinder for this special purpose. Such a cylinder would have its valve motion so proportioned that the admission and exhaust openings at 400 revolutions per minutes would be perhaps twice as large as that now obtained from the ordinary valve setting, and the valve gear would provide a quicker motion of the valve at such periods, somewhat on the Corliss principle. With such an arrangement the usual cylinders and valves would operate the locomotive at ordinary speeds and with proper regard for steam economy, while for the short period of very fast running the auxiliary cylinder and valve would operate with special regard to high speed requirements regardless of economy. It might be possible also to design a locomotive with an auxiliary turbine attached to the axle and have this operate only when high velocities are attained.

The conditions of high speed traction on the main lines, then, appear to be first, that for continuous operation at 80 to 100 miles per hour the curves must not exceed 1 deg., which is more than 1 mile radius and would mean a new alinement for any of our trunk lines; second, that if such a line was provided it could only be operated at such speeds by electric locomotives; third, that on present lines having long tangents the steam locomotive can only be adapted to occasional spurts of very high speeds by auxiliary cylinders or turbines which are specially designed for high speed requirements.

## NATIONAL RAILWAYS OF MEXICO.

The plan of the merger of the National Railroad of Mexico, the Mexican Central, the Mexican International and the Interoceanic of Mexico, and their absorption by the Ferrocarriles Nacionales de Mexico (National Railways of Mexico), has been successfully carried through. The first annual report of the National Railways of Mexico shows the results of operation of the combined properties of the National Railroad of Mexico and the Mexican Central for the fiscal year ended June 30, 1909, but as a matter of fact the two properties were not combined for the purpose of operation until February 1, 1909, and the other roads which are to belong to the system were leased during part of that period in some cases and were not operated at all by the new company in other cases. The results of operation, therefore, as shown in this first report cannot fairly be taken as an indication of what the new company may be expected to do after its organization has been completed. If it were not for this consideration the results would be decidedly unfavorable.

The plan of readjustment and union of the Mexican railways was dated April 6, 1908. It provided for the deposit of the securities of the Mexican Central and the National Railroad of Mexico in exchange for securities of a new company, which new company was to be controlled through ownership of a majority of the common stock by the government of Mexico. There was a general scale up of the total amount of securities issued, but in most cases the additions to capitalization were through the issue of new non-interest-bearing securities. The annual fixed charges on funded debt and equipment obligations of the new company are greater by $1,400,000* than the combined fixed charges of the old Mexican Central and National Railroad companies. The great advantage of this plan is in the opportunity that it gives for a comprehensive mortgaging of the property in such a way that the future needs of improvements and additions may be taken care of. The plan adopted in this respect is sound and far-seeing. The prior lien 4½ per cent. bonds, of which $225,000,000 (gold) are authorized, are secured by a mortgage, which reserves for issue after January 1, 1910, $47,500,000 bonds, of which $2,500,000 may be sold each year to pay for the actual cost of betterments and improvements, including equipment. There are also $38,000,000 prior lien bonds reserved to be issued only for the building or buying of additional lines of railway at a rate not to exceed $20,000 per mile. The mortgage securing these bonds is prior in lien to that securing an authorized issue of $160,000,000 (gold) general mortgage 4 per cent. bonds, guaranteed principal and interest by the Mexican government. Of these general mortgage bonds, $49,500,000 are reserved for issue after January 1, 1910, at the rate of $2,500,000 a year, to pay for betterments and improvements, including equipment, and $19,000,000 are reserved to be issued in payment for new line acquired or built at a rate not to exceed $10,000 per mile of new line. It will be seen that the company can issue, therefore, a total of $30,000 bonds per mile of new line.

The provision for the issue of a total of $97,000,000 bonds for additions and improvements is particularly wise, in view of the fact that a considerable part of the lines are not now in condition to handle the traffic that the company will have to carry if it is ever to earn a dividend on its common stock. Of the total 5,262 miles of main line and branches operated by the company June 30, 1909, only 2,603 miles were laid with 60-lb. or heavier rail, leaving more than 50 per cent. of the main line and branches laid with rail weighing less than 60 lbs. Of the total mileage of main line and branches, 528 miles are narrow-gage, not requiring as heavy rails as standard-gage track does.

The capitalization of the new company, on superficial examination, seems excessive. There was issued up to June 30, 1909, $222,700,000 stock. This is at the rate of $42,612 per mile for the average mileage operated last year. On June 30 there was outstanding $181,821,000 funded debt, including Mexican Central and National Railroad of Mexico securities undeposited, but exclusive of equipment trust obligations. Capitalizing rentals at 5 per cent., and subtracting from the total, the book value of securities owned, the funded debt outstanding amounted to $28,949 per mile of line operated. This makes $71,561 capital issued per mile.

The Mexican government took $63,730,000 common stock out of the total $74,790,000 common stock issued. This stock, together with $6,000,000 prior lien bonds and $2,450,000 general mortgage bonds, was given to the government in exchange for its guarantee of principal and interest of the general mortgage bonds. It is possible, therefore, to defend the issue of this common stock, which at present apparently does not represent tangible value, on the ground that it gives the Mexican government control of the management of the company, and that is what it wants, and gives the railway a strengthened credit, which enabled it to sell its bonds at a much higher rate than it could have without the guarantee of the government. Even making full allowance for these considerations, the capitalization of the rather varied assortment of good and bad lines taken over by the company is high.

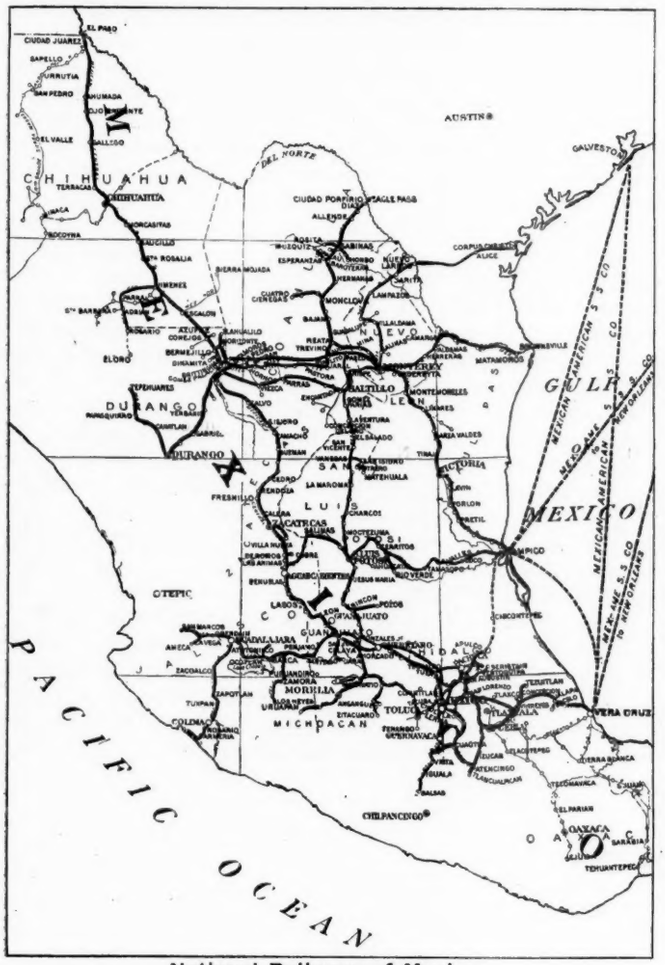
The process of putting the plan in operation has been successfully accomplished. A total of 97.62 per cent. of the securities of both companies—the Mexican Central and the National Railroad of Mexico—had been deposited up to June 30, 1909, under the agreement and plan of April 6, 1908. The only two classes of security holders of which any considerable percentage had not deposited their securities were the holders of 5 per cent. priority bonds of the Mexican Central and holders of common stock of the National Railroad of Mexico. As there was only a total of $284,600 of this railway company stock issued, the failure of holders of 60 per cent. of it to deposit does not appear important. Failure to deposit on the part of holders of 22 per cent. of the priority bonds, of which there were $6,597,000 issued, is a little hard to explain. Under the plan, each $1,000 priority 5 per cent. bond was exchanged for new prior lien 4½ per cent. bonds to the amount of $700 and new general mortgage 4 per cent. bonds of $475. This gave

*United States currency. In all figures given herewith the Mexican dollar has been taken at 50 cents in U. S. currency, and all figures are given in U. S. currency.

the bondholder who exchanged, securities with a face value of $1,175 as against his former $1,000 bond, and it gave him an income yield of 5.05 per cent. on the face value of his old bond as against 5 per cent., his former income. In both cases he has first class bonds with high grade security.

The plan was highly successful, apparently, in raising cash. The balance sheet of June 30, 1909, shows cash on hand of $31,200,000, of which $6,000,000 was for the payment of interest coupons due in the near future. This left $25,200,000 net cash, with current liabilities, exclusive of interest coupons, of $3,600,000.

In general, it is impossible to compare the results of operation in 1909 with the previous fiscal year, although some comparisons of details of operating expenses are made by the company and given in this first annual report. The showing made is not good, partly because the two properties were not operated under one management during the whole year and partly




**National Railways of Mexico.**

*Includes all the railways of the system, some of which were leased to National Railways in 1908-1909.*

because the fiscal year was one of rather severe depression in Mexico.

Total operating revenues amounted to $24,400,000 and operating expenses amounted to $14,600,000, leaving after the payment of interest and other fixed charges $630,000 available for dividends. After transferring 5 per cent. of net profits to reserve fund and paying the guaranteed dividend on the preferred stock, the company had left but $25,000 surplus. The earnings from the carriage of 5,700,000 tons of revenue freight totaled $17,500,000. The average length of haul was 217 miles and the average receipts per ton per mile were 1.413 cents. The average number of freight cars in a train on the standard gage part of the system was 21 and the average train load was 292 tons. The average number of empty cars in a train was 6.6.

Passenger revenue amounted to $6,200,000 and the number of revenue passengers carried was 6,300,000, the average receipts per passenger per mile being 1.432 cent.

The various classes of commodities carried are: Mineral products, furnishing 52 per cent. of the total tonnage; agricultural products, furnishing 23 per cent.; general merchandise, furnishing 11 per cent.; products of forests, furnishing 10 per cent., and live stock and animal products, furnishing 3 per cent.

Maintenance of way cost $3,300,000 last year and is compared in the annual report with a charge for maintenance of way in the previous fiscal year of $3,200,000. Assuming that the comparison is made between the expenses of approximately the same operated mileage in both years, this is at the rate of $586 spent per mile in 1909 and $569 in 1908. This is not a high figure, but is probably ample for maintenance alone without much improvement.

Maintenance of equipment as a whole cost $3,100,000 in 1909 and is compared with $3,950,000 spent in 1908. The following table shows the unit costs of maintenance of equipment:

| | 1909. | 1908. |
|---|---|---|
| *Repairs and renewals per locomotive | $2,459 | $3,631 |
| " " " " pass. car.. | 509 | 567 |
| " " " " frt. car... | 60 | 63 |

*Does not include any charge for depreciation or for superintendence.

It is assumed in making this comparison that the figures given for repairs and renewals in 1908 are for approximately the equipment that was taken over by the National Railways of Mexico.

The sums spent for repairs and renewals of locomotives in 1908 are rather high, so that even after the large reduction in 1909 the amount spent seems adequate. The sums spent for passenger cars and freight cars are ample, because part of the equipment is narrow gage and repairs are naturally less expensive on this class of equipment.

As was pointed out previously, the results of operation in 1909 must be considered as showing what the property was capable of earning before the merger and before the new management had taken charge, so that the results of the present fiscal year will be the first ones which can properly be taken as an indication of the success of the new management. The company is unfortunate in suffering severely from a heavy storm, which occurred after the close of the last fiscal year. The volume of rain in the territory around Monterey destroyed many sections of the line, and whole miles of grading, with their rails and ties, were completely carried away. Traffic has been considerably delayed, so that not only were there heavy expenditures for repairs for the damage, but gross earnings were also considerably reduced.

The following table shows the results of operation in 1909. It would probably not be an accurate comparison to show the results of operation of the constituent companies in 1908, so that these figures are not given:

| | 1909. |
|---|---|
| Average mileage operated | 5,227 |
| Freight revenue | $17,536,156 |
| Passenger revenue | 5,182,862 |
| Total operating revenue | 24,402,761 |
| Maintenance of way | 3,287,416 |
| Maintenance of equipment | 3,095,885 |
| Transportation | 7,234,607 |
| Total operating expenses | 14,583,447 |
| Taxes | 139,294 |
| Net operating income | 9,680,020 |
| Gross corporate income | 10,373,068 |
| Net coroporate income | 633,572 |
| Dividends | 576,658 |
| *Surplus | 25,235 |

*After the transfer of $31,679 to reserve fund.

## NEW BOOKS.

*Train Resistance.* Bibliography by F. J. Cole; typewritten manuscript. Price, $1.

The *Railroad Age Gazette* has on hand a few copies of the bibliography on the subject of train resistance, prepared by F. J. Cole. This was so long that we could not include it in Mr. Cole's serial publication; instead we had the typewritten copies made which are now offered.

# Letters to the Editor.

## A RAILROAD MEN'S IMPROVEMENT SOCIETY IN NEW YORK CITY.

New York, December 20, 1909.

To the Editor of the Railroad Age Gazette:

Last Saturday evening at 6 o'clock, under the auspices of the Railroad Men's Improvement Society, a lecture was delivered on "Some Legal Rights and Obligations of Railroad Companies," by George N. Orcutt, general attorney of the Erie Railroad, at the rooms of the Trunk Line Association, 143 Liberty street. This is the first of a series of special lectures to be given in connection with a regular course designed to train members of this society in the fundamental principles of railroading in all its phases. A number of prominent railway officers were present, who entered into a lively discussion of the subject, among them being Treasurer Bigoney of the Erie, General Passenger Agent Wallace of the Erie and Assistant Traffic Manager Lee of the Wells-Fargo Express.

This society was organized last month by some enterprising young railway men for the purpose of increasing the professional efficiency of the members of the society, through a laboratory study in a number of subjects bearing upon the organization, construction, traffic, auditing and other phases of steam and electric railways. The papers presented by members will treat each subject in a plain and untechnical manner. Never before has such an array of railway experts been brought together for the purpose of instruction.

An important feature is the practical co-operation of the railway officials in the form of special lectures. The ablest men in this field will speak before the society, each man dealing with that phase of the subject of which he is master. This represents an unusual opportunity for the members to come in personal contact with the most successful men in the railway world and to get their view point, their practical advice and their assistance. This method of study is thorough, practical and valuable. The course will give the members practical training and increased efficiency.

In addition to what I have mentioned the executive board, as the course progresses, will suggest collateral reading in connection with each branch of the railway business. All persons dealing actively with steam and electric railways are eligible to membership. Regular meetings will be held on alternating Thursdays at 6 p. m., beginuning December 2, 1909, at 143 Liberty street, room 406 (Trunk Line Association rooms), New York City. The members of the executive board are: Wm. J. Moody, Erie, chairman; Robert T. Donahue, 50 Church street, secretary; C. C. Howard, N. Y. C. & H. R.; Edw. S. Giles, D. L. & W.; E. Galle, N. Y. O. & W.; B. D. Branch, C. R. R. of N. J.; C. E. Hildum, Erie; T. Clem. Beck, L. V.; Charles E. Chalmers, Second Avenue Railroad; Thomas J. Darcy, Wells Fargo & Co.; Burdette G. Lewis, Public Service Commission.

# Contributed Papers.

## REPORT ON JERSEY CITY COLLISION.

The collision on the Pennsylvania Railroad at Jersey City, November 6, was reported in the *Railroad Age Gazette* of November 26. The New Jersey State Railroad Commission has now issued its report on the accident. The number of employees killed is given as four instead of five; but, aside from this, the statement of facts is substantially the same as that which we have published. The several officers and employees of the road who appeared before the board—11 in number—were sent voluntarily by the company. The report throws no light on the reason why the crossover switches had not moved when the signalman cleared the lever which should have caused their movement. The track walkers inspect the road at this point four times a day. In describing the fault in the interlocking machine, the commissioners say that the spring had "crept or lengthened." The warning given to the repairmen, after a fault had been discovered in an electro-pneumatic machine at Trenton, in July, was not explicit, so far as the commissioners can learn, and did not require any given course of conduct; but, nevertheless, inspections were thereafter made, daily, of the distance between the springs and the bands on the rollers. Of these inspections, however, no written reports were required or made.

The commission bases its conclusion on the finding of the report of the committee of experts and on the testimony of Signal Engineer Smith, of the Lackawanna, who had had trouble similar to that found at Jersey City, and the conclusion is, in substance:

"That the fastenings of the contact springs on the combination board of these machines should be strengthened and that the spring should be arranged so that there will never, when in the indicating position of the lever, be less than a one-eighth opening between the "X" and "Y" springs and their respective bands on the roller; that the repairmen in charge of the machine should be provided with instruments for the accurate measurement of such openings; that specific instructions should be issued to them requiring daily inspections, in accordance therewith, of the machine, and particularly those parts which caused the failure; that complete tests of the machine should be made at regular intervals, by a person possessing the expert knowledge which the repairmen lack; that the results of such daily examinations and such tests should be reported in detail, in writing, signed by the person making the same, to the superintendent of transportation (?) and supervisor of signals, and that such reports should remain permanently a part of the records of the company; and that such further and other measures be taken by the company as may be necessary to prevent a failure of this machine and its connections, making it impossible to clear the signal when the block is not clear and the switches in proper position."

The commission also investigated complaints that passengers delayed by this wreck had not been properly notified so that they could take other means of reaching their destinations. Many trains were delayed outside of Jersey City for many hours, in positions where it was impossible for the passengers to do anything except stay on the trains. They could learn nothing as to the cause of the delay or its probable duration. At Newark, only about eight miles from the scene of the wreck, the sale of tickets was resumed at 11.15 a. m., many hours before the wreck was cleared. Even where a notice was given to passengers at the ticket offices, those who entered trains without having to get tickets received no information whatever; and this condition continued even after it had been found that because of the difficulty of handling the steel cars in the wreck—the wrecking appliances not being adequate to meet the new conditions imposed by steel cars—a very long delay would be inevitable. At Trenton, about 60 miles from Jersey City, the agent received no information and continued the sale of tickets long after it was known at Jersey City that the delay would extend over many hours. The principal thing that the commission says on this matter is that in October, 1907, in a somewhat similar case, circulars had been sent to all the railways of the state calling their attention to the importance of giving the public better service in this respect. The Pennsylvania, in replying to that circular, said, in substance, that its practice was already good, but that in addition to giving out information and advising passengers as to the best way for them to reach their destinations, bulletin notices would thereafter be displayed giving all available information. It appears that this good resolution was not generally carried out.

## RAILWAY SIGNALING.*

BY COL. HENRY G. PROUT.

At the end of the year 1908 we had in the United States, according to *Poor's Manual*, 232,045 miles of railways. On the same date, according to the Interstate Commerce Commission, 59,549 miles of this railway was worked under the block system. A little more than one-fourth of the total mileage of the railways of the United States was block-signaled. In Great Britain not a mile of railway can be worked for passenger traffic unless it is protected by some kind of block signaling acceptable to the Board of Trade.

Last year was fortunate, on both sides of the Atlantic, in the small number of persons killed in train accidents; but year in and year out we have to face figures showing the immensely greater number of casualties to persons in this country than in Great Britain. However we think of the subject, whether it is relatively to the total number of passengers carried, or to the passenger-miles traveled, or to the passenger train-miles run, we find that every year we in the United States kill and maim many more people in train accidents than are killed and maimed in Great Britain. Looking further, we find that the British government compels the British railways to protect by block signals every foot of track that carries passenger traffic, and in this country only a trifle more than one-quarter of the railway mileage is worked under block signals.

A deduction often made from these quite well-known facts is that the federal and state governments should compel the railway companies to put in block signals. Legislation designed to bring that about is introduced at Washington and at the state capitals, and year after year recommendations are made by the various commissions for the passage of more laws. It has long been my notion that such laws are undesirable, inexpedient, and in the long run pernicious, but probably Huxley would have called me an administrative nihilist, and would have found convincing arguments to prove that the governments should intervene in this matter. On the face of the records alone the experience of the two great branches of the English-speaking people would go a good way to sustain the position of the advocates of government intervention, and perhaps enlightened selfishness does need an occasional jogging from a higher power. But the records should be used with knowledge of some of the facts back of them.

It seems possible that the result of government intervention in this matter would be disappointing, at least as regards saving life and limb. Taking at random quarterly reports of the Interstate Commerce Commission for the last three or four years, we see that of casualties to persons resulting from accidents of moving trains about half are from collisions; but collisions cover nearly all the accidents that can be prevented by signals. Furthermore, of all the collisions reported, an uncertain number, and occasionally a very disastrous one, occur under block signals, because those signals are disobeyed. In other words, if every foot of railway in the United States were block-signaled, one-half of the deaths and injuries occurring from train accidents might be saved. It might be more than half or it might be less. No man can tell. It should be understood that the commission's classification of "train accidents" does not cover highway crossing accidents, the running down of tramps and other trespassers, and all the great mass of casualties involving no accident to the train itself. If automatic signals were used some derailments caused by broken rails would be prevented, and some of the derailments at open switches would be prevented; but many more passengers and very many more trainmen are killed and injured every year by falling from cars or engines while getting on or off than are killed and injured in train accidents, and far the greatest death rate of the railroads of the United States is among trespassers on the right of way. So, while adequate signaling would prevent many disastrous accidents, it is only one of the possible means of improvement.

But there are other gains from signaling that would make it worth while, even if we leave out of sight the possible saving of life.

The greatest service which railways do for humanity is the cheap, prompt and regular movement of freight over the face of the globe. That is something that effects every civilized human being every minute of his life, and, indeed, has now come to affect a good many savages. The cheap, quick and safe movement of passengers is important, but not nearly so important to the world at large as cheap and reliable freight movement. Adequate signaling enables us to get the maximum of transportation out of a unit of track and a unit of equipment and a unit of man. This means economy, and in the end it means cheaper and better public service. An operating officer of a great railway has lately estimated that if a certain division, about 150 miles long, were equipped with automatic block signals, the cost of operating that division would be reduced by $51,000 a year. In three years the cost of signaling would be saved in the resulting economy. The greatest element in this economy is keeping trains moving and so saving the time of train crews and equipment; but a further element, peculiar to automatic signals, is the saving in wages of signalmen and operators. The number of trains that can be moving at any one time over a given piece of track depends upon the efficiency of the means taken to keep those trains from getting together. And, obviously, the shorter the blocks the greater the number of trains that can be constantly moving in a given territory. These facts are well shown in the movement over the express tracks of the subway division of the Interborough Railway in New York, where automatic signals are spaced 800 ft. apart. In one day, during the Hudson-Fulton celebration, more than 1,100,000 passengers were safely carried in the New York subway, a performance that would have been unapproachable without a highly efficient block system.

It has been said above that an operating economy of $51,000 a year could be made on one quite short division of a certain steam-operated railway by the use of automatic block signals. This is typical. But, furthermore, it often happens that a heavy investment in double-tracking may be postponed by adequate signaling, increasing the capacity of the single track.

These conditions are well understood by the officers of railways and are reasonably well known to railway directors. They stand ready to carry protection forward rapidly but judiciously. Technically, the signaling art in the United States is considerably ahead of any other country, in the variety and quality of engineering knowledge and skill that have been put into it; so, the rapid extension of protection by signals is mostly a matter of money. Only the rich can be really economical. If you cannot get the cash or credit to put in your year's coal in June, you must buy it by the scuttleful and pay twice as much in the end. If the people of the United States and the federal and the state governments wish their railways protected they must not destroy their earnings and their borrowing power.

No one else is so keenly sensible of the misery of killing and maiming people on the railways as the railway officer himself. No one suffers more in mind when a fatal accident occurs. No one else understands as he does the economics of the case, for it is his business to produce net earnings. He does not need to be forced, he only asks to be allowed, to earn the money and establish the basis of borrowing power.

All other forces, acting to retard railway improvement and development in signaling and in many other ways, become trifling and insignificant when compared with the destructive effect of those attacks on credit and on trained and efficient administration which pass under the name of regulation, not merely in finance and accounting, but in actual details of op-

*From *Harper's Weekly*. Copyright, 1909, by Harper & Brothers.

eration. In the one matter of safety for those who travel and for those who work on the railways, nothing else is so important as discipline and a high sense of duty among the men. Mechanical appliances are insignificant compared to the moral element in railway operation. But it is the opinion of many well-informed men, and I have no doubt of the correctness of that opinion, that the standard of discipline and of duty is steadily falling as the result of at least two forces: First, the cultivation of the theory that those who are responsible for the policies and operation of railways are criminals or semi-criminals, and second, the spread of the notion that the men are responsible, not to the companies that pay them or to the officers set over them or to the public that they serve, but to the brotherhoods which make their own laws and set up their own standards of conduct. Naturally, the operation of these two forces must come to an end some time, for they violate the basic principles on which organized society has been built up, but in the meantime we are bound to pass through much suffering. We may even go through the calamities of government ownership of railways, and having our army and navy and all our public utilities run by a commune. That is the logical end of the present notion of regulation, but it is hard to imagine that the American people will be such fools.

## TRAIN ACCIDENTS IN NOVEMBER.[1]

Following is a list of the most notable train accidents that ocurred on the railways of the United States in the month of November, 1909. This record is intended to include usually only those accidents which result in fatal injury to a passenger or an employee or which are of special interest to operating officers. It is based on accounts published in local daily newspapers, except in the case of accidents of such magnitude that it seems proper to write to the railway manager for details or for conformation:

*Collisions.*

| Date. | Road. | Place. | Kind of Accident. | Kind of Train. | No. persons reported Kil'd. | Inj'd. |
|---|---|---|---|---|---|---|
| 3. | Wabash | Logansport. | bc. | Ft. & Ft. | 1 | 3 |
| 4. | Gt. Northern | Rugby. | rc. | P. & Ft. | 0 | 3 |
| 6. | Pennsylvania | Jersey City. | xc. | P. & Ft. | 4 | 26 |
| 6. | Del., Lack. & W. | Stroudsburg. | xc. | Ft. & Ft. | 1 | 0 |
| 8. | N. Y. C. & H. R. | Gouverneur. | bc. | Ft. & Ft. | 1 | 1 |
| 9. | Louis. & Nash. | Leinerts. | bc. | P. & Ft. | 3 | 3 |
| 9. | Boston & Me. | Orleans, Vt. | xc. | Ft. & Ft. | 1 | 3 |
| 17. | Chic., B. & Q. | Beardstown. | xc. | Ft. & Ft. | 1 | 0 |
| 17. | Cin., H. & D. | Dayton. | bc. | P. & Ft. | 2 | 3 |
| 19. | Grand Trunk | Berlin, N. H. | rc. | Ft. & Ft. | 0 | 0 |
| 20. | Tex. & Pac. | Metz. | bc. | P. & Ft. | 0 | 0 |
| †21. | C., R. I. & P. | El Reno. | rc. | P. & Ft. | 3 | 12 |
| *25. | Northern Pac. | Lind. | bc. | P. & Ft. | 3 | 3 |
| *24. | Union Pacific | Edson. | rc. | Ft. & Ft. | 1 | 4 |
| 28. | S. A. & A. Pass. | San Antonio. | xc. | P. & Ft. | 0 | 6 |

*Derailments.*

| Date. | Road. | Place. | Cause of derlmt. | Kind of train. | No. persons reported Kil'd. | Inj'd. |
|---|---|---|---|---|---|---|
| 1. | Mobile & Ohio | Trenton. | b. bridge. | Ft. | 1 | 2 |
| 5. | N. Y., C. & St.L. | Willoughby. | malice. | Pass. | 1 | 0 |
| †4. | C., B. & Q. | Deadwood. | unx. | Pass. | 1 | 2 |
| 7. | Ches. & Ohio | Thurmond. | flange. | Ft. | 1 | 1 |
| 7. | Erie | Belmont. | boiler. | Ft. | 2 | 4 |
| 9. | St. L. & S. F. | Chander. | unx. | Ft. | 1 | 4 |
| 11. | M., O. & Gulf | Henryetta. | unx. | Pass. | 0 | 7 |
| 11. | South. Pac. | Harwood. | d. track. | Pass. | 0 | 8 |
| 15. | St. L. & S. F. | Texas Jcn. | unx. | Pass. | 0 | 2 |
| 16. | N. Y. C. & H.R. | Tonawanda. | boiler. | Ft. | 3 | 0 |
| 17. | St. L. & S. F. | Rogers. | d. track. | Pass. | 0 | 19 |
| 17. | Lehigh Valley | Newark, N. J. | flange. | Ft. | 1 | 3 |
| 18. | Seaboard A. L. | Denmark. | malice. | Pass. | 2 | 2 |
| 18. | Pennsylvania | Lancaster. | man on trk. | Ft. | 0 | 0 |
| 20. | Balt. & Ohio | Riebold. | unx. | Ft. | 0 | 3 |
| 23. | North. Pac. | Iron Mountain. | landslide. | Ft. | 1 | 2 |
| 22. | Ore. R. & N. | Bonneville. | landslide | Ft. | 1 | 2 |
| 24. | Phila. & R. | Frackville. | runaway. | Ft. | 1 | 0 |
| 30. | Pennsylvania | Manor. | unx. | Pass. | 0 | 5 |

*Other Accidents.*

| Date. | Road. | Place. | Cause of derlmt. | Kind of train. | No. persons reported Kil'd. | Inj'd. |
|---|---|---|---|---|---|---|
| *1. | South. Pac. | Coram. | cave-in. | Ft. | 2 | 0 |
| 3. | C., M. & St. P. | Denison. | b. rod. | Pass. | 1 | 0 |
| 20. | St. L. & S. F. | So. Greenfield. | boiler. | Pass. | 2 | 0 |
| 25. | C., B. & Q. | Lincoln. | boiler. | Ft. | 1 | 1 |
| 26. | Ore. R. & N. | Hood River. | boiler. | Ft. | 0 | 1 |
| 30. | S.P., L.A. & S.L. | Riverside, Cal. | explosion | Pass. | 0 | 1 |

[1] Abbreviations and marks used in Accident List:
rc, Rear collision——bc, Butting collision——xc, other collisions——b, Broken——d, Defective——unf, Unforeseen obstruction——unx, unexplained——derail, open derailing switch——ms, Misplaced switch——acc. obst., Accidental obstruction——malice, Malicious obstruction of track, etc.——boiler, Explosion of boiler of locomotive on road——fire, Cars burned while running——P. or Pass., Passenger train——F. or Ft., Freight train (includes empty engines, work trains, etc.)——Asterisk, Wreck wholly or partly destroyed by fire——Dagger, One or more passengers killed.

In the collision at Rugby, N. D., on the fourth, the fast mail train, running at high speed, demolished the caboose of a freight train in which 13 drovers were sleeping, and two of these men were fatally injured.

The collision at Jersey City, on the sixth, was reported in the *Railroad Age Gazette* of November 26, and the conclusions of the New Jersey State Railroad Commission in regard to it are given in another column of this issue.

In the collision at Leinerts, Tenn., on the ninth, the freight train was at a standstill, but the passenger train was running at high speed. In this train the leading car was a steel mail car, the strength of which is said to have materially mitigated the severity of the disaster.

The rear collision of freight trains at Berlin, N. H., on the nineteenth, about 7 p. m., was due to the breakage of the red glass in a semaphore signal. The leading train was standing at the station and a semaphore in the rear of the train was set in the stop position; but the light showed white instead of red, and the following train, which came on at good speed, overturned the caboose of the standing train and damaged a number of cars on a side track.

Drovers were again the victims in the collision near El Reno, Okla., on the twenty-first. The caboose, in which there were eight of the cattle men, was completely demolished.

The butting collision near Lind, Wash., on the Northern Pacific, November 25, about 1 a.m., was between an eastbound passenger train and a westbound empty engine moving backward. Three trainmen were killed and three others injured. The passenger train was one of the Great Northern, which was being run over the Northern Pacific in consequence of a blockade on the G. N. All of the passengers in the train escaped without injury. The wreck took fire and six coaches were burned up. The collision occurred about one mile west of Lind. The empty engine had left Lind without the right to the road. The A B C system of block signaling is in use on the division where this collision occurred. The time was about 1 a. m. The empty engine appears to have stopped at Lind, and while there the engineman made some repairs to his driving-wheel brake. After this work was completed he went to the office and got his card to go to the next station. On this card there was an "exception," providing that he should wait at Lind for the passenger train, meaning, apparently, that he should not proceed beyond the switch at which the passenger train would enter the side track. Evidently he did not read the exception. The signalman noticed the wrongful departure of the engine almost immediately, but not in time to stop it.

The derailment at Willoughby, Ohio, on the fifth, was illustrated in the *Railroad Age Gazette* of November 19. The train that was derailed at Denmark, N. C., on the eighteenth, was the Florida Fast Mail, No. 43, and it is said that the rail had been maliciously misplaced.

The fall of the roof of a tunnel at Coram, Cal., on the first, wrecked a freight train, and a brakeman was burned to death in the wreck, the people standing by being unable to extricate him. The caboose was buried under a mass of earth and rocks, and was set afire by the overturning of its stove.

Of the eighteen accidents to electric cars reported in the newspapers of the United States in the month of November, three resulted in fatal injuries. These were at Denver, Col. (2), and Salem, Ohio. The last mentioned was on an interurban line, a car running at 25 miles an hour being derailed by a broken rail.

On an interurban line near Vancouver, B. C., on the tenth, 14 persons were killed in a collision, due to a runaway.

## KENDRICK TIE FINISHING AND SCREW SPIKE DRIVING MACHINES.

A soft creosoted tie, if properly laid and tamped, will give as good service as an oak tie except in two respects. Owing to its lack of density as compared with oak, the rails or tie plates will more quickly cut or bed down into the tie under the weight of traffic, crushing the wood fibres. The other objection is that the spikes do not hold well, and the spike holes are quickly enlarged by the lateral pressure of wheel flanges against the rails. The gage is therefore maintained with difficulty and the spikes must soon be redriven. The life of the soft wood treated tie is thus measured by its effective holding power on the spikes.

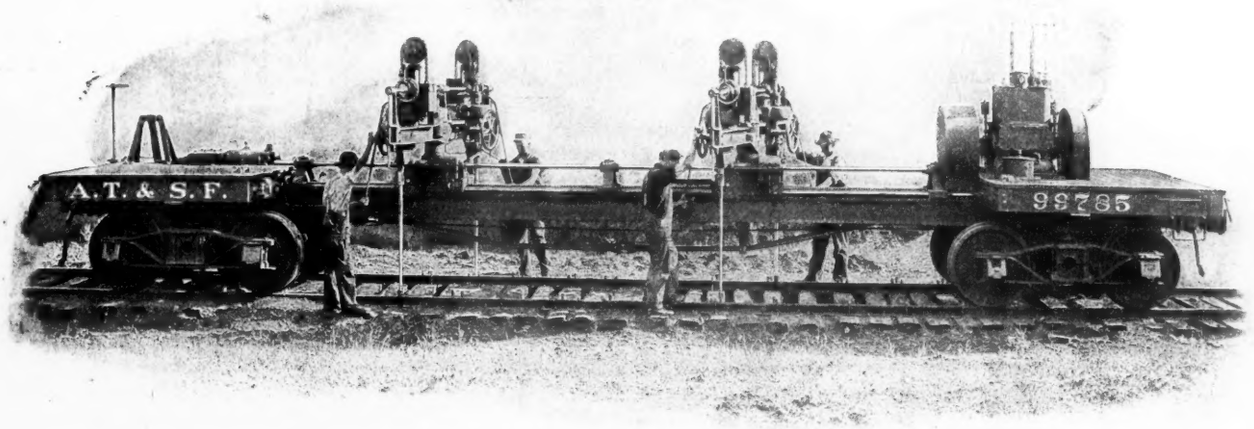
J. W. Kendrick, vice-president of the Atchison, Topeka & Santa Fe, has, after several years of study and experiment, worked out and patented a method by which to use the advantages of the low first cost and long life of the treated soft wood tie and overcome its objections.

The tie, before being treated, is put through a series of machines which perform the following operations: The first bores four holes 1¼ in. in diameter, two at each end, spaced 5 to 6 in. centers, according to the width of the base of the rail used. These holes are staggered and do not come opposite each other on the same end. All four holes are bored at once in an automatic machine. The tie then passes to the next machine which cuts a coarse screw thread in each hole. It passes then to a machine which screws into the holes four oak plugs threaded to fit the screw previously cut in the holes. The plugs are tapered or enlarged at the top, and are forced in very tightly against this taper. The tie is then passed to the last machine, which cuts off the projecting ends of the plugs and also gains and faces the tie to parallel surfaces to receive the tie plates. The tie is then put into the treating tanks and the chemical is forced into the wood under 200 lbs. pressure, giving a very deep penetration. The advantages secured by the use of the hard wood plugs are many. Tie plates and rails are supported by them, the end grain of the oak plugs giving much greater resistance to compression than is offered by a solid oak tie, and six to eight times the resistance of the soft wood tie alone. As the plugs are indefinitely renewable, the useful life of the tie is limited only by its general decay. In other words, it may be retained in service until its strength has been entirely utilized.

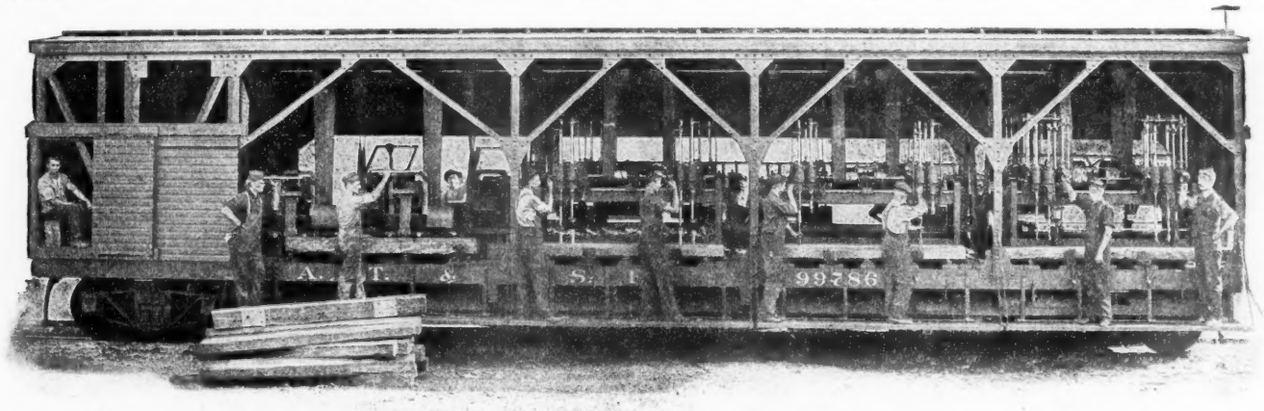
The holding power of screw spikes in these hard wood plugs is so great that the spikes have frequently been twisted off without stripping the hold of the spike in the plug.

In Germany practically all new track, and a large percentage of renewal work, is done with plugged soft wood ties and with screw spikes. The German method of plugging does not offer the support to the rail given by the Kendrick method and is therefore inferior to it, as this is one of the most important features. Mr. Kendrick has in his office a section of a plugged tie which has been in service in European track for twenty-six years.

While the tie plugging machinery can be located at the




Spike Screwing Machines.




Machines Preparing Ties for Screw Spikes.

treating plant or at some central point from whence the ties may be distributed along the line, the Santa Fe has preferred to have the machines mounted on cars for two reasons. At its treating plant at Somerville, Tex., where 50,000,000 to 75,000,000 ft. of ties are carried, the untreated ties are piled beside switch tracks in yards covering a large area. Instead, therefore, of bringing the ties to the plugging machines, the machines are brought to the ties, saving much of the expense of handling.

Another reason for having the machines mounted on cars is to facilitate the renewal of ties already in service. A complete set of machines as used by the Santa Fe consists of two multiple spindle boring machines, two multiple spindle tapping machines, two multiple spindle plug screwing machines and two double head gaining or dapping machines. These are arranged on the car in pairs, one machine of each kind on each side, so that eight ties are being worked at a time. In the outfits now in operation the machines are driven by a 75-h.p. Westinghouse steam engine, taking steam from the locomotive, which also moves the car. In future gasoline engines will be used and the car made self-propelling.

In addition to the machines above noted, there is a screw-spike driving outfit mounted on another car. This consists of one or more machines, each having two radial arms, each arm being provided with a geared driving head and a long spindle reaching down to the ties. Each spindle has a square socket chuck at its lower end to engage the spike heads. The radial arms cover an arc sufficient to reach four ties. A power traversing mechanism moves the heads lengthwise of the car so that fourteen ties can be reached before it becomes necessary to move the car ahead. An adjustable friction device on each spindle gives any desired driving force and spikes can be driven so hard as to twist them off in the wood.

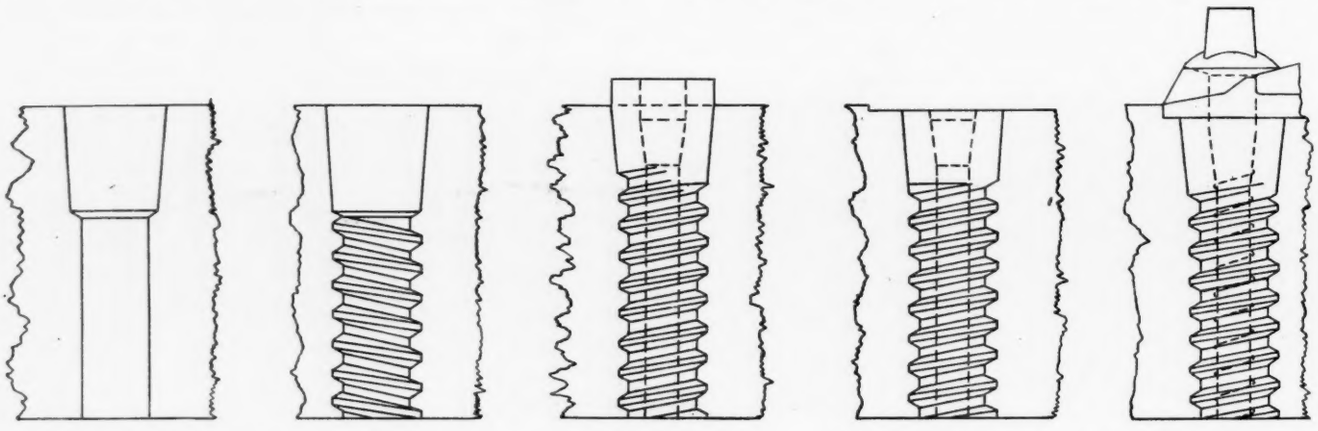
In reworking old ties out on the road, the old cut spikes are drawn and the ties taken from beneath the rails, passed through the machines on the plugging car, and immediately replaced in the track. The spike driving car follows the first car and drives the screw spikes into the replaced plugged ties. In this way ties which are spike-worn but otherwise sound are given a new lease of life.

The Santa Fe has so far laid seven or eight miles of track with these machines. As the spike holes are accurately spaced in the boring machine, the track is left in alinement and true to gage. Provision is made in the machines for required variations of gage for curve work, etc. The bearing of the plates on the ties is accurate and so is the bearing of the rail on the plates.

A two-head, four-spindle, spike-driving outfit will take care of about 4,000 ft. of track a day, and the machine equipment on the other car will plug the ties required for the same distance in the same length of time.

Designs for a lighter spike driver, having one or two heads and either two or four spindles, are nearly completed. These are intended for section or division repair work. They will be driven by a 20-h.p. gasolene motor, will be self-propelling and will be used for general track work, taking the place of the light gasolene section cars now used on some roads.

The entire line of tie plugging and screw spike driving machinery developed by Mr. Kendrick and other Santa Fe officials is now being built by Greenlee Bros. & Co., of Chicago and Rockford, Ill., who are prepared to supply them to any other roads who may wish to adopt the Kendrick system.




Sketch Showing Application of Screw Spike.

## GENERATING SYSTEM FOR THE ELECTRIFICATION OF THE GREAT NORTHERN RAILWAY.*

BY CARY T. HUTCHINSON.

The energy supply for the locomotive used on the Cascade tunnel electrification of the Great Northern Railway, which was described in the *Railroad Age Gazette* Dec. 3, 1909, is derived from the Wenatchie river, which flows along the line of the railway for a distance of some 20 miles. The power house is located about 2.5 miles west of Leavenworth. There is a low concrete diverting dam in the river at a point about 12,000 ft. west of the power house, and from this dam a wood-stave pipe of 8.5 ft. interior diameter runs for a distance of 10,908 ft. and continuing this stave-pipe line is a steel-pipe line for a distance of 962 ft. The pipe line has substantially the same gradient as the railway line, and gives a static head at low water of 203 ft. and in ordinary water of about 200 ft. The operating head at rated load is 180 ft.

The crest of the diverting dam is 400 ft. long; it has three head gates, a log sluice, and a fishway. The pipe line ends in a surge tank at the corner of the power house, having a total height of 183 ft. above its foundation. The tank proper is 30 ft. in diameter, and with a storage height of 54 ft. above the hemispherical bottom gives a storage capacity of approximately 38,000 cu. ft.

The pipe line leads directly into the upright pipe of the surge tank, which is 8 ft. in diameter; within the upright pipe is a waste pipe having a diameter of 3 ft. 2 in., extending 7 ft. above the level of the crest of the dam; in the tank the waste pipe is expanded uniformly to a diameter of 7 ft. 6 in., thus affording a circular weir of 23.5 ft. in length.

The power house is designed for three main units and two exciter units. There are now installed in the power house two main units, each turbine rated at 4,000 h.p., directly connected to a three-phase alternating current.

The two main units now erected, with the exciter, require approximately 500 cu. ft. of water per second when operating

*Abstract of a paper presented to the American Institute of Electrical Engineers.

at full load of 8,000 h.p., giving a velocity of flow in the penstock of 8.7 ft. per sec.

The extreme low flow of the river at the dam is estimated to be 380 sec.-ft. The small pond formed by the dam has a storage capacity equivalent to 8,000 h.p.-hr., for a depth of one foot; it is possible to draw the water in the dam down three feet. There are two other power sites in the canyon, each affording a head of 200 ft., available for subsequent developments.

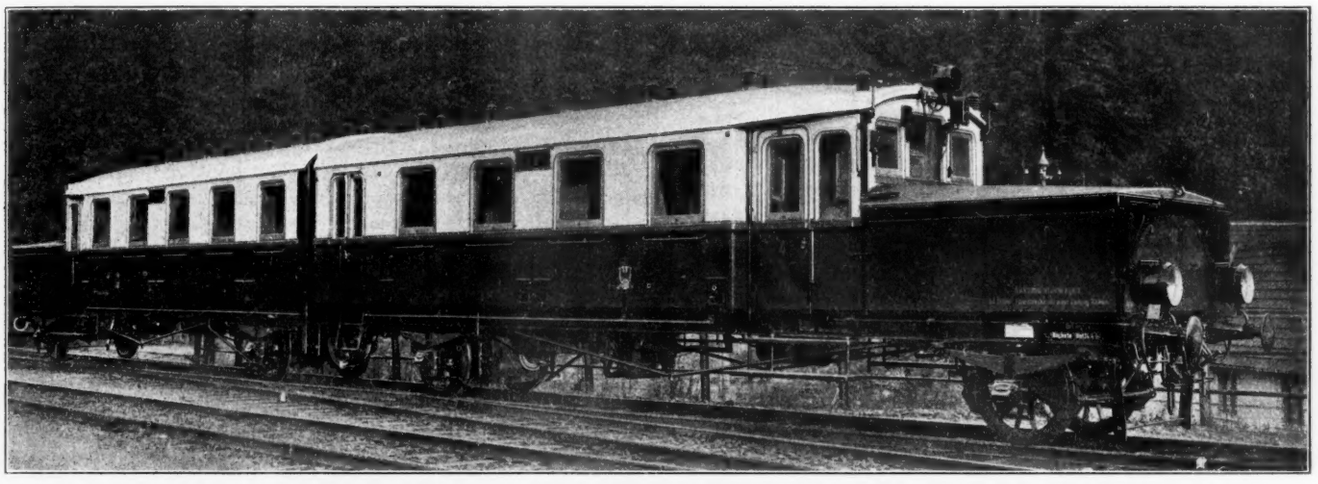
The entire hydraulic installation was designed and constructed under the direction of J. T. Fanning, of Minneapolis.

## ACCUMULATOR RAILWAY CARS FOR THE PRUSSIAN STATE RAILWAYS.

BY C. VAN LANGENDONCK.

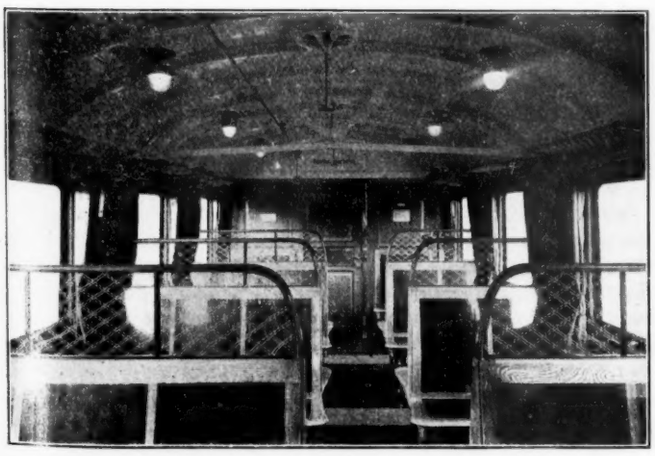
The Prussian State Railways have recently put in service new accumulator double cars, which are to be used for large through trains and heavy branch line traffic.

The first official trial run of these accumulator double cars took place on the line between Mayence, Gaualgesheim and Münster, 27 miles long, the result of which was very satisfactory. During the test the normal speed was exceeded. The braking tests which took place from time to time, while running at full speed, also gave very satisfactory results.



Accumulator Double-Car for the Prussian State Railways.

The general construction of the controller is the same in principal as the ones usually supplied for this class of work. One new feature, however, in this is the type of the so-called dead man's handle, which, on being released, automatically cuts off the current and thus brings the emergency brake into action. Two controllers arranged for series-parallel control are provided, one in each driver's cab. They are interlocked in such a manner that the car can be controlled from either cab. The motors both operate in series for starting and in parallel when running. A reversing switch is also located in the driver's cab. Each cab also contains a single pole reverse switch, by means of which either battery may be used. This switch also serves as an emergency switch. Signals from the driver to the guard are given by means of an electric buzzer, while communication in the opposite direction is obtained through the use of an electric bell in the driver's cab.



Interior of Accumulator Double-Car.

The accumulator double car is equipped with the Knorr compressed air-brake, which uses air at a pressure of 60 lbs. A pressure regulator is fitted between the two return valves, and is set so that the motor starts when the pressure falls below 56¼ lbs. and stops when 60 lbs. pressure is attained. The motor compressor is fastened underneath the car and consists of a single-acting twin-cylinder air pump driven by 2½ h.p. series motor, through bevel gearing. The motor and compressor are enclosed in separate cases, between which there is about 1 in. air space. This air space provides for cooling the compressor cylinders and the heat generated is therefore not transmitted to the motor. The motor compressor produces 10.9 cu. ft. of compressed air per minute. The train may also be electrically braked through the controller.

On the trial run it was found that the train when traveling at a speed of 36 miles per hour could be stopped by using the compressed air-brake alone in 600 ft., and when using both compressed air and electrical brakes in about 300 ft. The cars are also fitted with a simple mechanical brake, which may be operated from the driver's cab through a hand wheel.

The electrical equipment of each train, as supplied by the Felten & Guilleaume Lahmeyerwerke, consists of two interpole series motors, of the enclosed and waterproof type, each giving 500 h.p. on the two-hour rating and 850 h.p. on the one-hour rating basis.

The storage battery consists of 168 cells, fitted in two equal compartments, in front of the driver's cab. The total pressure is 310 volts and the capacity 368 ampere hours on a one-hour rating basis. A run of 62 miles may be made on one charging of the batteries, and a maximum speed of 31 miles per hour may be attained on level track.

Both the car and the signal lamps are fitted with 32-c.p., 75-volt Zircon lamps, having swan bayonet sockets. The headlights over the buffers are fitted with plain glass discs, having large reflector lamps, and one the small lamp outside the driver's cab is fitted with a green glass disc. All of the signal lamps are fitted with 32-c.p. lamps. Each car is fitted with ten 32-c.p. lamps and the driver's cab with one 32-c.p. lamp.

The lamps in each carriage are connected to one set of cells, so that two lamps always burn in series, each receiving current at 75 volts pressure.

The weight of a fully loaded train is about 62 tons, and from actual tests carried out on the trial run it was found that the energy used at a speed of 27 miles per hour was only about 19 watt hours per ton-mile.

## RAILWAY TERMINALS AND THEIR RELATION TO CITY PLANNING.*

BY F. A. DELANO,
President of the Wabash Railroad.

### THE GENERAL PROBLEM.

Not only is the problem of terminal facilities for the railways in our large cities becoming very complex in itself, but it is evident that it can not be disassociated from the problem of housing, of "intramural" transportation, or of laying out the cities' arteries, breathing spots, or their main centers of activity. All of these functions must be considered together and co-ordinated in order to get intelligent and satisfactory results. The extraordinary growth, in recent years, of cities in the old world as well as in the new, has naturally been the cause of much wonder, comment and analysis.

In the United States, at least, it has been found impossible for railways to plan for future needs more than twenty or twenty-five years in advance, under the most favorable circumstances, and in many cases projects for extensions and improvements that were thought, when planned, to provide for traffic so far ahead as to be extravagant have soon proved inadequate.

### CONDITIONS AFFECTING THE PLAN OF CITIES.

(A.) *Geographical and Topographical Conditions.*—The general plan of cities is, obviously, chiefly controlled by geographical and topographical conditions; they may, for convenience, be divided into three typical groups:

1. New York (Manhattan Borough) is a type of city whose development and growth have been forced into certain hard and fast lines by the fact that it is built on a long and comparatively narrow strip of land between two great rivers.

2. Pittsburgh is an example of second type, being located on hills divided by deep and comparatively narrow river valleys. In such cases, of course, railway entrance to the city is almost necessarily forced into the valleys and the development must be adapted to the geographical as well as the topographical conditions.

3. Chicago, Detroit and Buffalo are good examples of a third type, in which the city has first developed along a large body of water and then grown in concentric circles back from the water; the topography is so nearly flat as neither to suggest nor to interfere with any particular plan. In the case of Chicago, the river presents some special problems and obstacles to natural growth; but, generally speaking, this type of city develops on the plan of an opened fan.

(B.) *Effect of the Height of Buildings.*—Although we hear much of the advisability of city ordinances limiting the height of buildings, the ordinances of one administration are likely to be disregarded or repealed by the next, and it may be said—speaking generally—that in this country we have not been successful in fixing any limit to the height of buildings; Boston is a notable exception. Many of our large office and store buildings accommodate 10,000 people; and it is said of a large retail store in Chicago, which occupies not quite an entire city block and has a height of only twelve stories, that it frequently happens that there are 25,000 people in this store at one time. If the so-called "Loop District" or business heart of Chicago were filled with twenty-story buildings, a condition which seems to be fast approaching, we should have say forty blocks, each accommodating 25,000 people. For that district alone, then, one mile long and half a mile wide, our planning for streets and intramural transportation facilities must make provision for the daily incoming and outgoing of about 1,000,000 people, besides which an equal number will have to be cared for in the "fringe" or surrounding territory.

It is obvious that the magnitude of the problem is very great and that every transportation facility, underground, on the street level, and overhead, will soon be taxed to its utmost. In cities of special type, such as New York, various centers develop and the movement of people in and out of the shopping district interferes in a much less degree with the movement in and out of the wholesale district or to and from office buildings. In New York, however, there are not enough arteries in the axial line of its development to supply the constantly and rapidly growing needs, and we can now see that the street plan of that city was wrong; the north and south arteries should have been close together, while the east and west streets might better have been far apart.

(C.) *Effect of the Housing Problem.*—It may be said, generally speaking, that the radius within which the worker in a city may live is determined almost wholly by the time it takes him to travel to and from his daily occupation, and the cost of the transportation. An overwhelming majority of the people must live within a half to three-quarters of an hour of their work and will not pay a fare exceeding ten cents, morning and night. Hence, it folows that the quicker and more economical the transportation, the greater will be the radius of country open for the development of homes.

### RELATION OF THE RAILWAY TERMINAL TO CITY DEVELOPMENT.

The healthy growth of our cities is. then, dependent on the concurrent growth of adequate transportation facilities, and the time is rapidly approaching when there will be practically no real homes within our big cities proper; there are apartments, flats and tenements a plenty—but no real homes, except in the surrounding fringe. In New York's east side there is a teeming population employed in and about their own tenements, but of the hundreds of thousands who daily go to and from their work in lower Manhattan, the business district proper, it is probably safe to assume that three out of four live outside of the island, while in Boston the percentage of workers in the city proper who live in the surrounding fringe is much larger, because of the greater adequacy of its suburban service.

In small cities, and in many of considerable size, it is desirable that the railway trains shall deposit their passengers close to the business center of the city; in most cities of the United States of under 100,000 inhabitants this is probably true. Even so, it is well to bear in mind that the city of 100,000 to-day which has its most valuable property occupied by passenger terminals will regret the adverse occupation of this land when it has doubled or quadrupled in size. In cities of the old world, which were already great before the railways were created, and in our larger cities in this country, it is no longer possible and, to my mind, it is highly undesirable. The reason for this conclusion is that the railway terminal in a large city, if it be adequate to the needs, takes up directly and indirectly an immense amount of space, requires the closing of streets, and thus greatly interferes with the growth and development of a city. Indeed, a railway, both as an artery of traffic and as an obstacle, should be viewed like a great river or broad canal, for while it can be passed over and under more readily than a river, it necessarily forms a very important obstacle to any growth or development.

Railway terminal facilities in a city may be analyzed, in a general way, as follows:

I. Passenger terminals.
(a) For suburban passengers.
(b) For through passengers.
II. Freight terminals.
(a) For high class packages of less than carload freight

*A paper read before the American Institute of Architects at Washington, D. C., December 16, 1909.

which is now, generally, carried by truck through city streets.

(b) For the more important carload freight which is also, to a very large extent, trucked through our city streets, or to some extent, handled directly from car to warehouse.

(c) The coarser articles; like coal, brick, stone, sand, structural steel, lumber and miscellaneous building materials which need not necessarily be handled in the heart of the city and which are usually distributed from yards conveniently located about the city.

The public naturally considers the passenger terminal of a railway as the all-important matter. A comparatively small percentage of the population of our big cities know much about the freight facilities of the railways and yet, since from two-thirds to three-quarters of the earnings of railways are developed from freight business, and practically all our supplies of all kinds, including our daily food, are transported by freight, that branch of the service is of most vital importance. Beyond question, the planning of adequate and proper freight facilities in our large cities is not only more difficult but also of more real importance to the life, health and comfort of everyone living in or visiting the city than the location or plan of the passenger facilities. In a city of 100,000 inhabitants or less, it is to be expected that the railway shall deposit its passengers within, say, one-quarter of a mile of the business center of the city. This means, for a great majority of the people, stations within easy and comfortable walking distance of the seat of business of the city, but in our very large cities it is practically impossible, not to say undesirable, that such a condition of affairs should exist. If it were possible to separate the suburban, or short-haul, travel from the through, or long-haul, travel, it would be desirable to let the suburban passengers be carried into and through the regular channels or arteries of the intramural scheme of transportation. The kind of metropolitan station which is desirable and necessary for the long distance business is neither desirable nor necessary for the suburban service. A Chicago critic, writing recently on this subject, has suggested that trunk line railways should have no terminals in large cities and that the trains should pass directly through, having in mind, evidently, that in Chicago, for instance, trains from New York should simply stop at the main station and then pass through on their way to some other point. Aside from the physical difficulties of creating a system like this in a big city where it has not already been provided for, there seem to be few advantages in such an arrangement. An analysis of the character of the business done on a through train arriving at a city like Chicago would probably show that a very large majority of people on board were not going beyond the city—or, at least, not immediately. By stopping a train arriving from New York for only a moment at the main station in Chicago and then sending it on, say, towards Omaha, a very small percentage of people who desire to move on directly to some city further west might be accommodated, but it would be decidedly inconvenient to the Chicago passengers who wished to go to Omaha. In other words, if it were only necessary for a train to remain in the station a few moments to take on passengers with their baggage and bundles, there would be very little necessity for large or commodious passenger stations. The necessity for a large number of tracks in our stations is due not only to the number of trains handled, but to the length of time trains have to remain in the station for the accommodaton of passengers. Admittedly, it does not take very long to discharge passengers from a long train, nor so very long to take off the baggage and mail, but at least half an hour is usually allowed for the convenience of passengers to permit them to board and get comfortably settled in the train preparatory to a long journey. If it were feasible for railways to run directly through the center of a city and have their yards and terminal facilites on comparatively cheap property on the further side of the city limits, there would be quite a large economy in respect to the amount of property required for a downtown terminal, but I question whether such an arrangement would be at all satisfactory to the public. To make the most important station in a large city simply a way station where trains should stop, say, not to exceed five minutes, would not, I am afraid, satisfy public needs; and I believe that the suggestions in this respect grow out of a confusion of ideas between public requirements for suburban travel and those for through travel. I have said enough, I believe, to show that there are wholly different conditions existing in the two cases. The suburban passenger should, if possible, reach his business destination without being required to transfer to another system of transportation, but this is neither required nor particularly desirable in the case of the long-distance traveler. The latter usually wishes to go to his home or his hotel before proceeding to his work.

### FREIGHT TERMINALS.

As has already been said, the difficulties in planning freight terminals are much greater than with passenger terminals, and there is obviously room for immense improvement and development in this direction. The old-fashioned method of handling freight from wagons across a covered platform to be loaded into cars—now almost universally in use—is satisfactory in towns and cities of moderate size; but in our large cities, where the congestion of street service is very great, causing constant detentions, where the cost of teaming, due to high wages, is excessive, and where, on account of the fact that to make freight facilities adequate freight houses must be made very long, the cost of trucking the freight by hand and the time wasted are both excessive. This constitutes, to say the least, a very difficult condition to contend with, and one whose remedy can only be found by a thorough and comprehensive scheme of development. It sometimes seems strange to the writer that the first development of our tunnel facilities for transportation in cities should have been for the carriage of passengers. What if we had built our subways first to relieve the surface of the streets of all the slow-moving traffic and had reserved the surface of the streets for our own use? Certainly light and fresh air are more necessary for human comfort than for the handling of goods!

Because freight is not self-propelling, the cost of gathering and distributing it in a large city is an enormous item. As a result of economic conditions in this country, wages are increasing rapidly, and, at the same time, the unit of human efficiency without the aid of machinery is diminishing. The cost of all work largely dependent on manual labor has increased in the last twenty years so much that every business man is constantly seeking some sort of labor-saving device to stem the tide; incidentally, it may be remarked that the greatest stimulus to mechanical invention in this country is thus the steadily and constantly rising rate of wages.

These economic conditions have resulted in damage alike to railways and shippers, because no mechanical devices have been found to offset the immense increase in labor cost. All admit that the methods are crude—no better than they were fifty years ago—while not nearly so cheap. How to solve the problem is the question before us.

The passenger station problem where many railways are to be dealt with is difficult, but the freight problem is, by comparison, stupendous. Take the case of Chicago, for example—six passenger stations are handling the twenty-three separate trunk lines (four of which have more than one line into the city), but when it comes to freight depots, each of these twenty-three lines has at least one downtown depot for receiving and forwarding of freight, with from three to ten subsidiary stations further from the heart of the city to supplement the main station. It is safe to say that the value of the ground utilized by these downtown freight stations and the tracks serving them is not less than $5,000,000. But that is not all; if these facilities accomplished what they were designed to accomplish, economically and satisfactorily either for the transportation company or the shippers, it might be

money well spent, but the truth is that this is only partially true. Furthermore, the shipper—instead of getting the full advantage of having a number of lines to ship over—is at added expense as compared with the shipper in a small town with only one or two railways. In the latter case, the shipper may load his wagon with freight for any destination in the shippers' guide and leave it to the railway company to sort it out and select the appropriate routes; but in the large city of Chicago he has to divide his truck load according to the number of roads for which he has packages, for each railway station is restricted to the carriage of freight reached by its lines. It is for this reason that the shippers say we need union freight stations more than we need union passenger stations. Passengers can walk or ride, and know how and where they want to go, but freight must be trundled through our streets and, hence, means must be found so that it shall be disposed of with the minimum of expense and handling.

Having this problem in mind, the writer ventures something more than a criticism; to wit, a suggestion. Because it seems essential that we seek to relieve the congestion near the city's heart, it seems evident that we should try to move the freight out towards the less densely settled portions of the city, and there, where the ground is to be had on reasonable terms, create facilities for the economical loading of trains of cars in proper order and rotations. The ideal way of doing this would be for the municipality to furnish a tunnel or subway under the streets, bisecting the wholesale business district. This freight subway should be provided with a platform or conveyor moving intermittently, or else continuously, at slow speed, having at intervals of, say, two to four blocks small stations for the receipt of freight. The freight, duly receipted for by authorized agents, would be loaded on the conveyor, where it would remain until delivered and unloaded in a large, commodious, well-arranged house for the distribution and loading of freight. The conveyor, as already described, should be arranged to move in a subway loop through the heart of the city, emerging from that and along some railway right of way to a convenient depot or clearing house for loading the freight.

A less complete scheme would be one in which each of the combinations of lines already inter-associated in passenger terminal arrangements should create their own subway loops, thus joining the downtown freight depots in a chain, greatly relieving the existing congestion by carrying the freight out where good facilities might easily be created. Such a subway conveyor scheme is readily applicable to the outward moving freight of the city, but admittedly less applicable to the inward-moving business. Even if only the outward-bound business were thus provided for, there would be a great advantage and relief from the congestion due to trucking freight through downtown streets.

Mr. Burnham, in his admirable "Plan of Chicago," has shown the relations of the various traffic loops to each other, indicating in a diagramatic way how they may be developed and co-ordinated one with the other and with a scheme for sorting and interchange outside the city.

We know that high buildings were impossible without the modern American elevator; that high buildings made high land values, put new demands on transportation, and finally created such congestion on city streets as to make it incumbent on all concerned to do their part to relieve the streets of all that can be taken off them. How shall this be done? Shall we begin by compelling suffering humanity to go underground, or shall we begin by sending the freight in that way and postpone the necessity for human burrowing as long as possible? Of course, it is recognized that rapid transit on city streets with cross currents of traffic at every block is not safe or even possible, but let us begin by relieving the street surface first, then by intelligent traffic rules let us so segregate the surface traffic that it shall move with a minimum of interruption.

LOCATION OF PASSENGER TERMINALS FOR THROUGH TRAFFIC.

Enough has been said to indicate that the writer believes the freight terminal problem in our large cities is even more important and more difficult than the passenger problem. But, naturally enough at this time and place, you wish to hear particularly of the passenger terminal problem. Admitting, if you will, that the suburban passenger requires no elaborate terminal; that he would prefer a system of transportation which would give him an option of getting off at any one of several stations within the heart of the city—such service, for example, as the elevated roads or subways and surface lines give in our larger cities—the terminal for handling through traffic becomes the paramount consideration. The facts that people as a rule travel more than they used to, that long journeys are very common, that the comforts of travel require handling very long trains, that a modern passenger station must be supplied with many collateral conveniences, are all tending to increase the difficulties of the problem. An analysis of the travel will usually show that by far the greater proportion of the users of long distance trains are the well-to-do people who live in widely scattered districts, so that it is sometimes a mistake to assume that the passenger terminal must be central to the center of the population. A more correct statement would be that it should be near the center of convenience for the principal users. What the center of convenience is, is a matter of some difficulty to determine. To a large portion of the transient visitors, the conveniently located passenger station center would bear some relation to the natural or convenient hotel and theater center; to accommodate another large proportion of the traveling public it might be that it should be conveniently related to the residence districts, which are usually widely separated. But in no one of these cases is it to be expected or necessary that the passenger arriving by train from a long journey or departing on a long journey expects to do so without taking some conveyance. An analysis of the business will usually show that the large number of passengers arriving and departing on through trains use surface, elevated or subway cars, cabs, busses, automobiles, or other conveyances. The important question is not that it shall be within walking distance, but that it shall be conveniently related to these various means of intramural transportation. It has already been noted that every new facility of transportation, every quickening of speed, by annihilating distance increases the possible radius of distribution of the homes of the people whose whole career is directly connected with the city, even though they may not live within its corporate limits. Thus the automobile, though it is an expensive and perhaps extravagant means of transportation, is having a very influential effect in this direction. Indeed, one cannot study this problem without being impressed with the inter dependence of through traffic terminals and intramural transportation facilities, and it is certainly true that if we settle the one without regard to the other we are adopting a short-sighted policy. The evils of this method are to be seen where it has been pursued.

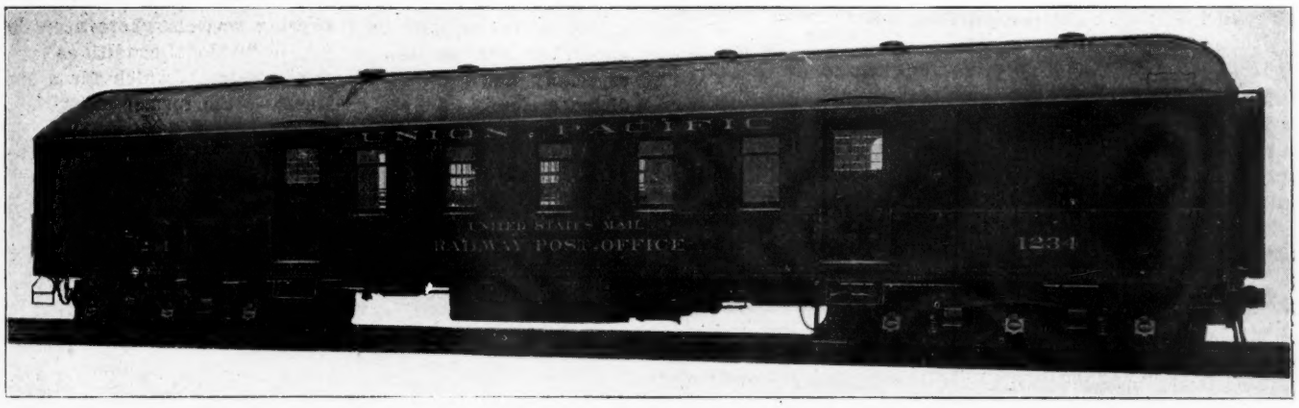
The location of a union station or groups of stations obviously becomes increasingly more difficult with the number of railways to be served. In Chicago it is an interesting problem because twenty-three railway systems have their termini there. Of these systems, three represent two, and one represents three different lines entering the city. We, therefore, have in Chicago a problem of determining and locating a passenger terminal for lines radiating in twenty-eight different directions; as the approaches to Chicago are flat, many of these lines cross and re-cross each other, making a network which is indeed tangled. To make a complete and ideal readjustment of all these lines can not be undertaken because it would involve too great a destruction of vested interests, but a readjustment and simplification so far as the city terminals alone are concerned is both feasible and desirable. The writer made some suggestions along these lines some five

years ago, and, thanks to the assistance of Mr. Burnham and others, these suggestions have been taken up and, with some modifications, have had the approval of important interests, though there still remains much to be done before the scheme can be consummated. Those of you who have seen Mr. Burnham's "Plan of Chicago" doubtless know in a general way what that plan is in its relation to the railways. It contemplates making a series of union depots three to six in number, along a broad avenue to be created on Twelfth street; the most important east and west thoroughfare between Harrison street on the north and Eighteenth street on the south—a distance of more than a mile. Along the axis of Canal street and between Van Buren and Madison streets, it is proposed to locate one or two other groups of stations so that the final arrangement would enable a single encircling avenue of traffic—Twelfth street east and west, and Canal street north and south—to reach the passenger terminals of the entire city. The phrase "avenue of traffic" has been used advisedly, with the thought that it should be not simply a boulevard for light vehicle traffic, but an avenue on which electric cars, traffic trucks and other vehicles could move. In this general plan, due consideration has been given to the freight traffic, for who could live in Chicago and ignore it?

It may be argued that the companies or groups of companies that have relative advantages as compared with their neighbors will never agree to such a plan, and it has been urged frequently that those who have charge of these great railway properties owe a duty to their stockholders not to yield any advantage they have. While this may be admissable reasoning, it is also true that not a single one of these companies (with the possible exception of the Chicago & North Western, which is in the midst of making very extensive improvements) has all that it requires; and that there is not one of these companies or groups of companies which doesn't require some added facilities, either passenger or freight. A complete study of the whole problem in every case will, it is believed by the writer, convince all that no final plan can be worked out which does not consider co-ordination of the city or intramural transportation facilities with the railway terminals. As has been well said, the railway station for through traffic has become the modern portal of a great city. Through it are passing the citizens of the city as they come and go on their journeys, and, what is perhaps almost as important, through it are passing visitors who frequently get their first and last impression of the city from this station and its immediate surroundings. Those of us who live in Chicago realize that much adverse criticism has come from those whose only impressions have been made by their journeys from the railway station to their hotels or business engagements; bad impressions which it has taken many favorable impressions to overcome. In some respects, the problem in Chicago is very difficult; in other respects, and especially when considering the number of units involved, it is remarkably simple. In more ways than one, however, it is just the same sort of problem that faces many other cities. It is a problem which cannot fail to appeal to the imagination of any man and is surely worthy of the deepest study of the best minds among architects, engineers and statesmen, as well as railway men.

## 60-FT. STEEL POSTAL CAR FOR THE UNION PACIFIC.

The Union Pacific has recently received from the Pullman Company 20 all-steel postal cars, which are similar in general construction to the steel coaches for the same line illustrated in the *Railroad Age Gazette*, June 12, 1908, page 83. The new postal cars have six-wheel trucks with cast steel frames, the two trucks weighing 41,100 lbs., the car body 66,200 lbs., the total weight being 107,300 lbs. The underframe is made up principally of two center sills, 10-in. I-beams, 25 lbs. per foot with top and bottom cover plates ¼ in. thick, and the side sills, which are heavy angles, 6 in. x 3½ in. x ⅜ in. The lateral under framing is 4-in. channels, 15¼ lbs. per foot, spaced about 2-ft. centers. In these cars the heavy cast steel double body bolster is dispensed with, and a considerable reduction in weight is made by the use of the single cast steel bolster similar to that used for the coaches with four-wheel trucks. There are no truss rods but there are two needle beams, each a ½-in. x 4-in. x 5-in. tee, 15.7 lbs. per foot.




60-Ft. Steel Postal Car for the Union Pacific.

The draft rigging is fitted with Sessions' friction gear made by the Standard Coupler Co., New York, having two 6¼-in. x 8-in. M. C. B. springs. The floor consists of a layer of corrugated steel, then a layer of hair felt, another layer of corrugated steel; then expanded metal, and on top of that a final coating of flexolith.

The car sides have steel posts made of 1½-in. x 4-in. x $\frac{5}{16}$-in. angles, spaced 25½ in. centers. There is no diagonal bracing but the sides are stiffened by the sheathing and a heavy angle iron belt rail on the inside. The steel sheathing is $\frac{5}{32}$-in. thick below the belt and $\frac{3}{32}$-in. above. The end sheathing is $\frac{3}{32}$-in. thick.

The roof is the semi-elliptical section which has been adopted as a common standard for the steel passenger equipment of the Harriman lines. The rise from the top of the plate to the top of the roof is 2 ft. 11⅛ in. The steel carlines are ¼-in. x 1⅛-in. x 3½-in. angles, spaced 2-ft. centers. The roof is made up of steel sheets $\frac{1}{16}$ in. thick on the outside, a space 2½ in. deep, and steel ceiling .05 in. thick. The principal dimensions of the car are shown in the issue of June 12, referred to above. The car is remarkable for its light weight and illustrates the fact that steel can be employed throughout in passenger car construction without increasing the weight but vastly increasing the strength as compared with the wooden car and with the additional advantage of safeguarding the postal clerks by securing a fireproof car.

## NEW YORK TUNNEL EXTENSION OF THE PENNSYLVANIA RAILROAD; CROSSTOWN TUNNELS.*

BY JAMES H. BRACE AND FRANCIS MASON,
Members, Am. Soc. C. E.

II.

TUNNEL EXCAVATION.

During the early part of the work the contractor devoted his entire attention to the work of excavation. Nearly all the excavation east of Fifth avenue was done before any of the lining was placed. At a number of points west of Fifth avenue, and at a few points to the east, the nature of the rock was such that the two operations had to be done simultaneously.

*Single-Tunnel Method.*—For an average distance of 350 ft. west from the First avenue shafts there were four single tunnels. The rock was sound and comparatively dry. A top heading of the full size of the tunnel and about 8 ft. high was first driven. It was drilled by four drills mounted on two columns, and was blasted in the ordinary way. The bench was about 13 ft. high. Tripod drills, standing on the bench, drilled the usual holes, but, owing to the lack of head-room, steels long enough to reach the bottom of the bench could not be used. Tripod drills were set as low as possible at the foot of the bench and drilled lifting holes. These holes were inclined downward from 10 deg. to 15 deg. to the horizontal, and were spaced to converge at the location of the drainage ditches. The heading was usually driven from 10 to 20 ft. in advance of the bench. At this distance a large part of the muck from the heading was shot backward over the bench. In the single tunnels the muck was loaded by hand.

*Twin-Tunnel Methods.*—From the end of the single-track tunnel westward to First avenue on Thirty-third street, and to Madison avenue on Thirty-second street, with some exceptions, each pair of tunnels was excavated for the entire width at one operation. Three different methods of work were extensively used. They were the double-heading method, the center-heading method, and the full-sized heading method, and these differed only in the manner of drilling and blasting. The bench was usually within 10 or 15 ft. of the face of the heading, and was drilled and fired in the same way as in the single tunnels. After the installation of the permanent plant, most of the muck was handled by steam shovels.

In the double-heading method the top headings for each tunnel of the pair were driven separately, leaving a short rock core-wall between them. The headings were drilled from columns in the manner described for the single tunnels. The temporary rock dividing wall between the headings was drilled by a tripod drill on the bench of one of the headings, and was fired with the bench.

In the center-heading method, only one heading was driven. It was rectangular, about 8 ft. high and 14 ft. wide. It was located on the center line between the tunnels. In general, the face was from 6 to 12 ft., or the length of one or two rounds, in advance of the remainder of the face at the top. The center heading was drilled by four drills mounted on two columns. By turning these drills to the side, they were used for holes at right angles to the line of the tunnels, by which the remainder of the face of the heading was blasted. By turning the drills downward, the bench holes under the center heading were also drilled. The center heading explored the rock in advance of the full-width heading, and gave a good idea as to the care needed in firing.

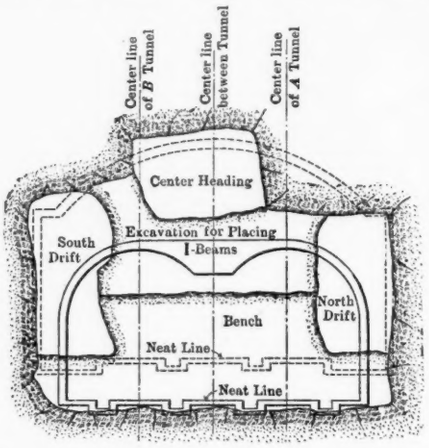
For the full-width-heading method, ten drills were mounted on five columns set abreast across the face. Holes were drilled to form a cut near the center line between the tunnels. The remainder of the holes were located so that they would draw into the cut. The bench was frequently drilled from the same set-up of columns by turning the drills downward. In sound rock this method proved to be the most rapid of any.

Nearly all trimming was left until immediately before the concreting. It was then taken up as a separate operation, but proved to be costly and tedious, and a hindrance to placing the lining.

*Materials Encountered.*—All the rock encountered was the familiar Hudson schist, but it varied widely in its mineral constituents and in its physical characteristics. In many places where the rock surface was penetrated, a fine sand was found that was probably quicksand. The material above the rock in the open-cut sections was mostly sand.

The concurrence of the old watercourse with the points where difficulties in the construction of the tunnels were encountered has been noted in a previous paper.

In all cases where the course of this ancient stream was crossed (except at its final intersection of Thirty-third street), the rock was found to be very soft and disintegrated, a large quantity of water was encountered and heavy timbering was required. The construction at these localities will be taken up later. In addition, disintegrated rock, but of a less troublesome character, was invariably met with under the depressions in the rock surface developed by the borings from the streets and test holes from the tunnels. Many of these places required timbering, and no timbering was elsewhere necessary except at the portals. These coincident conditions were especially marked in Thirty-second street, which for a long distance closely adjoins the course of the former creek.




**Twin Tunnels Through Excavation Started for Three-Track Tunnel.**

*Disposal of Spoil.*—The materials excavated from the tunnels were dumped at the Thirty-fifth street pier on barges furnished by the railway company under another contract, and were towed to points near the Bayonne peninsula, where the spoil was used principally in the construction of the Greenville freight yards and the line across the Hackensack meadows to the tunnels. Details of this work will be given in a subsequent paper. After December, 1907, when the excavation was about 85 per cent. completed, the contractor furnished the barges and effected the complete disposal of the spoil.

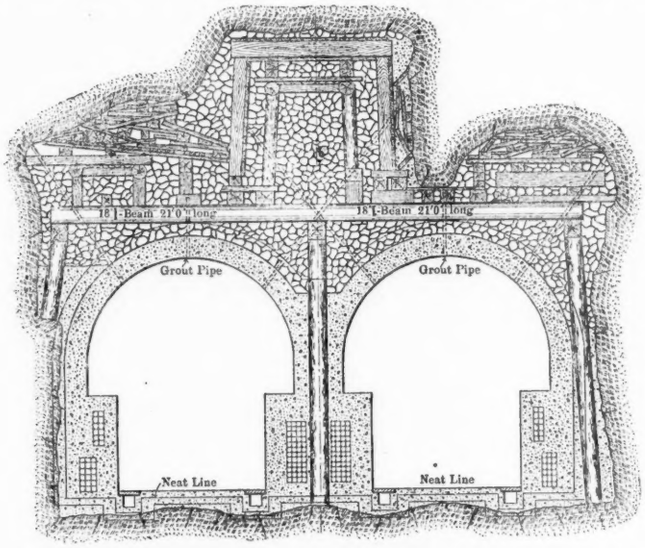
*Difficulties of Excavation.*—The excavation of the twin tunnel in Thirty-third street was continued westward to the west line of Fifth avenue on the original grade. At that point the contractor started three drifts in the three-track section. The relation of the drifts to each other and to the cross-section are shown by the accompanying drawing. The center heading was driven a little in advance of those on the sides. At a distance of 65 ft. west of Fifth avenue the rock surface was broken through in the top of the heading, and a very fine sand was encountered. For some distance east of this point the rock was badly disintegrated, and the heading required timbering. Through the soft material, tight lagging was placed on the sides and the roof of the heading, and the face was protected

* From a paper presented before the American Society of Civil Engineers on December 1. Published in *Proceedings* for October, 1909, page 1016.

by breast boards. There was a moderate flow of water through the cracks, and, in spite of every effort, some of the fine sand was constantly carried into the heading.

In one or two instances considerable ground was lost at the face. On the evening of December 14, 1906, as a heavy coal wagon was passing along Thirty-third street above the heading, the rear wheels dropped through the asphalt pavement. An examination disclosed a cavity under the pavement about 14 ft. long, 12 ft. wide and 14 ft. deep. Evidently the fine sand had gradually settled into the voids caused by the loss of material at the face, and the settlement broke the brick sewer over the heading. The sewer was temporarily repaired, and the hole in the street was filled before morning. A tight bulkhead was built across the heading, and work was abandoned at that point. The north drift was advanced to a point 108 ft. west of Fifth avenue, where sand was also encountered and a considerable run occurred. After that time all work on the three-track section was discontinued.

The company then took up the consideration of changes in plan. To determine the difficulties of driving a twin tunnel at a lower elevation, an exploration drift, 8 ft. high and 12 ft. wide, was driven on the center line of the street as a top heading on the proposed new grade. Test holes were drilled above this heading and to the sides. The results indicated




**Twin Tunnels Through Excavation Started for Three-Track Tunnel.**

that there was sufficient rock cover of fair quality to enable the twin tunnel to be driven without great risk. The new plan (continuing the twin tunnel westward at a lower grade) was adopted in March, 1907, and work was immediately resumed at Fifth avenue.

The relation between the cross-sections under the old and new plans at that point is shown by the drawing referred to above. Before the new section was excavated it was necessary to support the timber work in the old headings. The plan adopted is also shown. The rock was excavated under the center heading, as shown in cross-section, for a length of about 3 ft. A girder composed of two 18-in. I-beams was then put in position over each line and supported on the sides by posts. The ends at the center lines between the tunnels were supported on short posts bearing on the rock bench. The support of the timbering in the headings was then transferred to the girders by additional posts. Blocking was also inserted between the tops of the beams and the rock walls between the headings. When the roof had been made secure, the removal of the bench was begun. As the work advanced it was necessary to replace the short posts at the center of the tunnel by others of full height, and there was considerable settlement in the I-beams during this operation. When the bench had been removed to a point 61 ft. west of Fifth avenue, settlement was detected in the street surface above. Bench excavation was suspended and a section of the permanent lining, 35 ft. long, was placed. The space between the lining and the beams and between the beams and the roof was filled with rubble masonry. Grout pipes were built into the masonry and later all voids were filled with grout. A second section of bench was next removed and more lining was placed. Work was continued in this way until all the roof at the old three-track headings had been secured. In this portion of the work the posts were embedded in the concrete.

Between Fifth and Sixth avenues there were two more sections of bad rock where it was necessary to support the roof with steel beams. At these latter points there were no complications with the excavation for the three-track tunnel, and the work was much simpler. To avoid leaving the center posts in the permanent work, two rows of temporary posts were placed, the center wall and skewback were built, and the posts were removed, before placing the remainder of the lining.

In Thirty-second street the normal progress of the excavation was frequently interrupted by encountering soft and unsound rock. In the excavation between the East river and the intermediate shafts it was possible to overcome these conditions by temporarily narrowing the excavation on one side and supporting the roof on 16-in. x 16-in. transverse timbers caught in niches in the rock at the sides, leaving sufficient room for the steam shovel to work through. In order to save time the height of the excavation was not increased before placing these timbers, so that previous to the concreting they all had to be raised to clear the masonry lining and were then supported on posts on the center line between the tunnels. This permitted the remainder of the excavation to be made, and such additional timbering as was required was placed. At most of these sections a brick arch and waterproofing were used, on account of the presence of water. In certain places the center line posts were buried in the core-wall, and, in order to permit the placing of the water-proofing, were then cut off one by one flush with its top as the load was transferred to the completed masonry. In other cases the load was transferred to posts clear of the masonry and the center line posts were entirely removed. Under such conditions the normal concrete methods, to be described later, could not be used, and special forms were substituted.

In this section of the work the most serious difficulties were encountered near Fourth avenue a short distance east of the intermediate shaft, and beneath the site of an old pond. The rock cover was known from the boring to be very thin, and the presence of the subway overhead caused some anxiety. The excavation was at first taken out to practically full width and timbered, but the rock became so treacherous that the heading was narrowed to a width sufficient for one tunnel only. With this span the roof in the roof held without timbering. As the masonry lining approached, sufficient trimming was done to permit the placing of the core-wall and one arch. Above the completed core-wall and brick arch the voids were filled solid with rubble masonry to give an unyielding support to the roof. The excavation of the remaining width of tunnel was then undertaken. Near the west side of Fourth avenue, the excavation broke out of rock at the top, and fine sand and gravel with a large quantity of water were encountered. The work of excavation was arduous, and proceeded very slowly, on account of the cars with which it was executed. Only a small amount of sand entered the tunnel, but the lining was placed as soon as the excavation was completed. Rubble masonry packing and grout ejected through pipes built into the arch were used to fill the voids above the roof. As a further precaution against the settlement of the subway, 2-in. pipes were washed down from the street above the point where soft ground was exposed in the roof of the tunnel, and through them grout was forced into the ground at

various depths. Careful levels show that no settlement of the subway has taken place.

West of the intermediate shaft the tunnel was excavated for full width until bad rock was encountered about 60 ft. west of Madison avenue. Timbering was used for a short distance, and then the heading and bench were narrowed to 18 ft., and steam-shovel excavation was abandoned. As the heading advanced, the rock grew steadily softer, the difficult conditions in this locality culminating when a slushy disintegrated feldspar was met with, requiring poling and breasting. Thereafter the rock improved markedly, but near the east side of Fifth avenue its thickness above the roof was found to be only 1½ ft., and the advance was stopped, pending a decision as to a change of plan.

After some delay, an exploration drift, similar to the one already described, was driven through to Sixth avenue, and a change in plan was made, substantially the same as for the Thirty-third street tunnels. Enlargement to full size was at once started, but, for 400 ft. the rock was very soft and poor, and required extremely careful handling. The exploration drift was widened out to the full twin-tunnel width, and cavation of the bench and the placing of the lining proceeded alternately, with the I-beams temporarily supported on long posts while the concrete core-wall was being built. Considerable settlement took place while shifting the posts, and eventually showed on the street surface and in the adjacent sidewalk vaults, but no damage was done to the structural portions of the buildings.

While the above work had been going on westward from Fifth avenue, the excavation of the twin tunnel eastward from the end of the open-cut section at Sixth avenue had been proceeding rapidly, and, toward the end of the difficult Fifth avenue work, it was being attacked from both directions.

### PROGRESS OF EXCAVATION.

Owing to the numerous sections of poor rock, interspersed throughout the work with stretches of sound rock, the progress of the excavation was very irregular, especially in Thirty-second street. The rate of excavation in good ground is shown in Table 1. In the sections of bad ground, the operations of excavation, timbering, and lining were often carried on alternately, and it is impracticable to include them in the table.

TABLE 1.—*Progress and Methods of Excavation in Good Ground.*

| Type of excavation. | Tunnels. | Worked from | Dates. From. | Dates. To. | Time elapsed in days. | Length of tunnel excavated in lin. ft. | Av'ge advance per day in lin. ft. | Methods and conditions. |
|---|---|---|---|---|---|---|---|---|
| *Thirty-third Street.* | | | | | | | | |
| Full-sized single tunnel.. | B | First avenue shaft. | Feb. 28, 1906. | May 12, 1906. | 74 | 346 | 4.7 | Top heading and bench. Muck loaded by hand. |
| Full-sized single tunnel.. | A | First avenue shaft. | Feb. 28, 1906. | Apr. 30, 1906. | 62 | 255 | 4.1 | Top heading and bench. Muck loaded by hand. |
| Full-sized twin tunnel... | A & B | First avenue shaft. | Aug. 23, 1906. | Jan. 5, 1907. | 136 | 789 | 5.8 | Top full-width heading and bench. Muck loaded by steam shovel. Working exclusively on this heading. |
| Full-sized twin tunnel... | A & B | Intermediate shaft. (West of shaft.) | Apr. 4, 1906. | Oct. 31, 1906. | 210 | 730 | 3.5 | Top center heading and bench. Muck loaded by steam shovel. Working alternately in headings east and west of the shaft. |
| Full-sized twin tunnel... | A & B | Intermediate shaft. (East of shaft.) | Apr. 4, 1906. | Oct. 31, 1906. | 210 | 783 | 3.7 | Top center heading and bench. Muck loaded by steam shovel. Working alternately in headings east and west of the shaft. |
| Full-sized twin tunnel... | A & B | Intermediate shaft. (East of shaft.) | Nov. 1, 1906. | Dec. 26, 1906. | 56 | 311 | 5.5 | Top full-width heading and bench. Muck loaded by steam shovel. Working exclusively on this heading. |
| Exploration drift ..... | A & B | Intermediate shaft. (West of shaft.) | Mar. 1, 1907. | July 23, 1907. | 145 | 947 | 6.5 | Exploration drift about 9 x 12 ft. Mucking by hand. 14 timber bents were placed in March and 7 in April, 1907. |
| Twin tunnel. Enlargem't of exploration drift .. | A & B | West shaft (West of shaft). | Sept. 6, 1907. | Dec. 4, 1907. | 89 | 603 | 6.8 | Drift excavated to full width and bench. Muck loaded by steam shovel. |
| *Thirty-second Street.* | | | | | | | | |
| Full-sized single tunnel. | C | First avenue shaft. | Jan. 25, 1906. | Apr. 30, 1906. | 95 | 367 | 3.9 | Top heading and bench. Muck loaded by hand. |
| Full-sized single tunnel. | D | First avenue shaft. | Jan. 27, 1906. | Apr. 30, 1906. | 93 | 354 | 3.8 | Top heading and bench. Muck loaded by hand. |
| Full-sized twin tunnel.. | C & D | First avenue shaft. | May 22, 1906.<br>Aug. 11, 1906. | *July 24, 1906.<br>Nov. 29, 1906. | 173 | 810 | 4.7 | Double heading and bench. Muck loaded by steam shovel. Stretches aggregating 200 ft. narrowed to about 25 ft. and later enlarged are included. |
| Narrowed twin tunnel.. | C | Intermediate shaft. (East of shaft.) | Mar. 19, 1906. | May 28, 1906. | 70 | 58 | 0.8 | Excavation about 30 ft. wide. Top full-width heading and bench. Muck loaded by hand. Steam shovel not installed. |
| Narrowed twin tunnel.. | C | Intermediate shaft. (East of shaft.) | May 29, 1906.<br>July 18, 1906.<br>Aug. 12, 1906.<br>Jan. 15, 1907.<br>Feb. 17, 1907. | *July 3, 1906.<br>July 31, 1906.<br>Nov. 23, 1906.<br>Feb. 5, 1907.<br>Mar. 21, 1907. | 208 | 1,206 | 5.8 | Excavation about 30 to 35 ft. wide. Top full-width heading and bench. Muck loaded by steam shovel. |
| Full-sized twin tunnel.. | C & D | Intermediate shaft. (West of shaft.) | Dec. 1, 1905. | May 10, 1906. | 161 | 225 | 1.4 | Double heading and bench. Part of the muck handled by hand and part by steam shovel. |
| Exploration drift ..... | C & D | Intermediate shaft. (West of shaft.) | Feb. 1, 1907. | Sept. 13, 1907. | 225 | 1,033 | 4.6 | Exploration drift about 10 ft. by 13 in. Muck loaded by hand. 14 ft. timbered. |
| Twin tunnel. Enlargem't of exploration drift... | C & D | Eastward from open cut | Feb. 1, 1908. | Feb. 14, 1908. | 14 | 65 | 4.6 | At portal of twin tunnels. Drift excavated to full width and bench. Muck loaded by hand. 12 ft. timbered. |
| Twin tunnel. Enlargem't of exploration drift... | C & D | Eastward from open cut | Feb. 15, 1908. | Apr. 14, 1908. | 59 | 524 | 8.9 | Drift excavated to full width and bench. Muck loaded by steam shovel. Full-width tunnel timbered for 26 ft. independently of the main excavation. |

* Time and distance omitted while working through timbered stretches.

I-beams were placed and supported, in much the same manner as in Thirty-third street. The rock was so soft that it was frequently necessary to drive poling boards ahead as the face was mined out with picks and shovels. The load was very heavy, and the work the most difficult encountered in the tunnels.

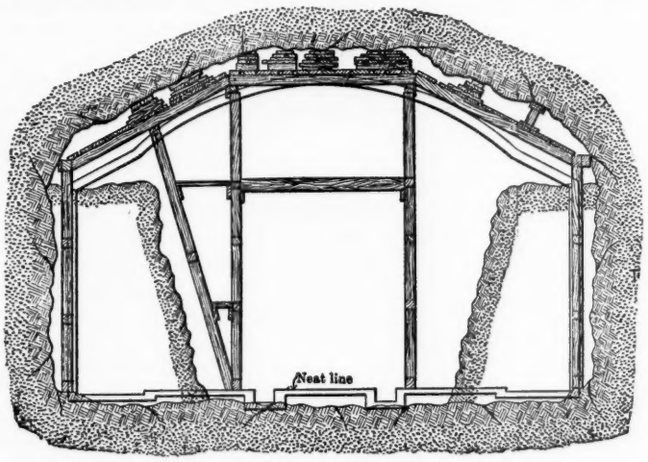
After this stage of the enlargement was reached, the ex-

### THREE-TRACK TUNNEL EXCAVATION.

When it became evident that the work through the Fifth avenue section would be extremely slow, shafts were sunk in each street between Sixth and Seventh avenues. The shafts were located in the streets, but in such a way as to block only half of the roadway. At the same time it was decided to construct in open cut about 200 ft. of the three-track tunnel at

the west end of the contract in Thirty-second street, where the rock surface was below the top of the tunnel. It was hoped that the remainder of the work could be built without opening the street, but further investigation showed that this was impracticable, and eventually all the three-track tunnel in Thirty-second street, except 120 ft. east of the shaft, was built in open cut.

*Thirty-second Street Work in Tunnel.*—Following the sinking of the shaft, a drift was driven across the street at the crown of the tunnel, and a top heading on the south side was excavated in both directions. Frequent cross-drifts to the north side showed that the rock was nowhere very sound and that except for a short distance east of the shaft, it was distinctly unfavorable for the wide three-track excavation. In this stretch the north ends of these cross-cuts were connected by a




Center Excavation; Three-Track Tunnel.

second heading, and wall-plates and sets of three-segment arch timbering were set up to support the roof of the drifts. The cross-cuttings were gradually widened and timbered until the entire excavation had been made down to the level of the wall-plates. The bench was then excavated in two shifts, leaving the wall-plates supported on narrow longitudinal berms, which were removed in short sections to permit the placing of posts under the wall-plates.

*(To be continued.)*

## NEW PASSENGER EQUIPMENT FOR THE SOUTHERN.

The accompanying illustration shows an exterior view of one of about 100 new passenger cars built by the Pullman Company, Chicago, and the Barney & Smith Car Co., Dayton, Ohio. These cars have recently been received by the Southern Railway.

These cars are 66 ft. long over end sills, 74 ft. 8¾ in. long over buffers, and 9 ft. 10⅛ in. wide over the siding. They have a seating capacity for 72 passengers.

The underframing is built of structural steel. The six-wheel trucks are of all cast-steel design, built by the Commonwealth Steel Co., St. Louis, Mo. The side framing of the car is wood, though of heavy construction, with reinforced anti-telescoping ends. The side framing is bolted to the steel underframe by numerous through bolts.

The interior of the car has been made as plain as possible, though it is still very neat and finished in mahogany. Electric lighting is used throughout. The following special equipment has been used in the construction of these cars:

| | |
|---|---|
| Axles | Open-hearth steel |
| Basket racks | Rostand |
| Brakes | Westinghouse high-speed |
| Brake-beams | Waycott high speed |
| Buffing arrangement | Forsyth Bros., platform buffer |
| Ceiling | Composite board |
| Couplers | Janney-Buhoup, three stem |
| Curtain fixtures | Ring type, Curtain Supply Co. |
| Curtain material | Pantasote |
| End gates | Southern Railway standard |
| Floor covering | Rubber aisle strips |
| Heating | Gold combination straight and vapor steam |
| Inside finish | Mahogany |
| Journal bearings | Ajax metal |
| Journal boxes | Symington |
| Lighting | From axle dynamo; Safety Car Heating Lighting Co.'s system. |
| Paint | Lowe Bros. |
| Roofs | Flood & Conkling |
| Sash locks | Edwards No. 13-0 |
| Side bearings | Wood's roller |
| Springs | Railway Steel Spring Co. |
| Trimmings | Statuary bronze |
| Trucks | All-steel; Commonwealth Steel Co. |
| Underframing | Structural steel |
| Varnish | Murphy |
| Vestibules | Pullman type |
| Vestibule diaphragms | Ajax canvas |
| Vestibule trap doors | Edwards automatic; steel doors |
| Wheels | 36-in. rolled steel, Standard Steel Works Co. |

## COMPARATIVE EFFECTS OF BUSINESS DEPRESSION ON EARNINGS OF RAILWAYS AND OTHER CONCERNS.

BY F. E. VOEGELIN.

Railway earnings are commonly accepted as the barometer of business. Wall Street and the business world in general are quick to discount improving conditions in manufacture and commerce as indicated by railway earnings. To a great extent the weekly and monthly figures published in the financial journals forecast accurately a decline or an advance in the country's prosperity, and yet, after a careful study it is found that the railways suffered less in the recent business depression than other corporations that reported decreased earnings. One may assume that the recovery of industry in general will not be quite so marked or rapid as gross earnings of railways may indicate.

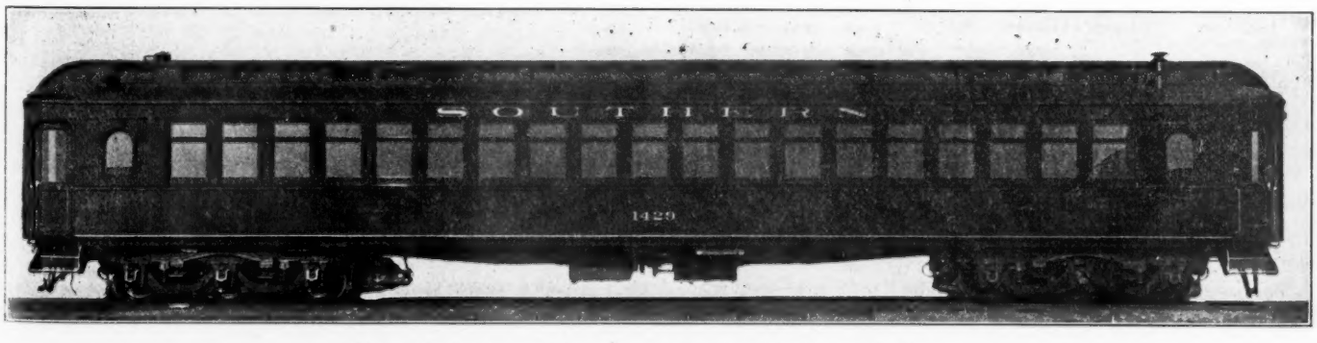
In recent months much attention has been directed to the stability displayed by electric railway earnings in times of business depression. A comparison of increases and decreases in gross and net earnings in 1908 gives substantial effect to the claims of electric railways:

TABLE I.—*Increases and Decreases in Earnings.*

| | Gross earnings | | Net earnings | |
|---|---|---|---|---|
| | Amount. | Per ct. | Amount. | Per ct. |
| 164 steam railways* | —$301,750,000 | 11.89 | —$53,371,000 | 7.13 |
| 203 electric railways.* | + 1,875,000 | 0.67 | + 3,035,000 | 2.65 |
| 381 electric railways† | + 3,265,000 | 0.94 | + 1,118,000 | 0.79 |

— Decrease. + Increase
*Calendar year. †All fiscal years.

In the above statement results are given for 203 electric




Steel Underframe Passenger Coach; Southern Railway.

railways with fiscal years ending December 31. These companies are included also in the 381 railways, fiscal years of the remaining 178 companies ending June 30 or September 30. Electric railways felt the business depression much less severely than the steam roads; but although their aggregate earnings showed an increase, some of the individual roads fell behind in earnings. This seems to be particularly true in localities where street railway traffic is wholly or in large part dependent on one branch or division of industry.

The 11.89 per cent. falling off in steam railway business brought about a 13.89 per cent. reduction in operating expenditures for both labor and material, thereby effecting a decrease in net earnings of only 7.13 per cent. In the following tabulation the decrease in operating expenses of electric railways reflects the fall in prices of materials and supplies, rather than a reduction in expenditures for labor:

Table II.—*Increases and Decreases in Earnings and Expenses.*

| | 164 steam r'ys. Amount. | Per ct. | 203 electric rys— Amount. | Per ct. |
|---|---|---|---|---|
| Gross earnings | —$301,750,000 | 11.89 | + $1,875,000 | 0.67 |
| Operating expenses | — 248,379,000 | 13.89 | — 1,160,000 | 0.71 |
| Net earnings | — 53,371,000 | 7.13 | + 3,035,000 | 2.65 |

— Decrease. + Increase.

It is apparent at once that the strength of electric railways lies in passenger traffic, freight movement forming a very small portion of their business. Figures for 59 of the largest steam railway systems in the United States show that their decrease in freight earnings was equal to five times the decrease in passenger earnings, the latter showing a decrease of 2 per cent., against 10 per cent. for freight revenues.

A point of contrast is noted, however, between interurban electric railways and steam railways serving agricultural territory.

The only group of railways showing an increase in passenger revenues was the "Granger" roads. Of the systems included in this group the St. Paul shows a falling off of $219,000, the Minneapolis & St. Louis of $7,000 and the Iowa Central of $41,000. The Atchison, the Union Pacific, the Burlington, the Rock Island, the Great Northern, the Northern Pacific, the Canadian Pacific and the Colorado & Southern each show an increase, ranging from $141,000 for the Great Northern to $1,728,000 for the Union Pacific, $1,812,000 for the Northern Pacific and $2,096,000 for the Southern Pacific. These roads, while serving agricultural territory, also get a large proportion of transcontinental business.

Contrasted with them are interurban electric railways serving farming districts, such as the Indiana Union Traction, which shows a falling off of $135,000; the Lake Shore Electric, with a decrease of $16,000, and the interurban lines of the Illinois Traction Company, which, while showing an increase in the aggregate, would show a decrease on a mileage basis, since this company operated more mileage in 1908 than in 1907.

Earnings in 1908 increased not only in the railway division of public utilities, but also in the gas and electric and telephone branches. The following tabulation is a comparison of increases and decreases in income for leading industries:

Table III.—*Comparison of Increases and Decreases in Income*—1908 *with* 1907.

(Last 000's omitted in figures under "Amount.")

| Class of Industry. | Gross income— Amount. | Per ct. | Expenses.— Amount. | Per ct. | Net income.— Amount. | Per ct. |
|---|---|---|---|---|---|---|
| 164 steam r'ys. | —$301,750 | 11.89 | —$248,379 | 13.89 | —$53,371 | 7.13 |
| 203 Elec. rys. | + 1,875 | 0.67 | — 1,160 | 0.71 | + 3,035 | 2.65 |
| 2 Exp. Cos. | — 195 | 0.36 | + 775 | 1.56 | — 413 | 8.31 |
| 10 Gas & Elec | + 3,034 | 6.43 | + 1,322 | 4.56 | + 1,660 | 8.96 |
| 2 Telep. Co.s | + 6,685 | 5.40 | + 4,011 | 4.46 | + 2,674 | 7.89 |
| 2 Tel. & Cble | .... | .... | .... | .... | — 3,065 | 30.18 |
| 7 Steel Co.'s. | .... | .... | .... | .... | — 80,542 | 41.80 |
| 4 M. & Smltg | .... | .... | .... | .... | — 9,557 | 32.95 |
| 29 Misc. Ind. | .... | .... | .... | .... | — 16,772 | 18.68 |

(— Decrease. + Increase.)

These figures afford a fair comparison, for in many cases they cover years ending December 31, thereby corresponding with the periods taken for electric and steam railways.

The steel industry suffered a greater setback than any other, the reduction in net earnings for the seven big producers amounting to $80,542,000—in round numbers $27,000,000 more than the decrease in net earnings of 164 steam railways. This decrease is made up as follows:

Table IV.—*Decreases in Net Earnings of Steel Manufacturers.*

| Company. | Amount. | Per cent. |
|---|---|---|
| United States Steel Corporation | $68,208,000 | 40.73 |
| Lackawanna Steel | 4,539,000 | 70.80 |
| Republic Iron & Steel | 1,981,000 | 39.40 |
| Sloss-Sheffield Steel & Iron | 515,000 | 30.49 |
| Bethlehem Steel | 447,000 | 16.94 |
| Pennsylvania Steel | 1,761,000 | 39.34 |
| Cambria Steel | 3,091,000 | 62.03 |
| | $80,542,000 | 41.80 |

The reduction in net earnings of the larger mining and smelting companies, though not so marked as the decrease in steel earnings, was heavy, amounting to 32.95 per cent. For the fiscal year ending April 30, 1908, the Amalgamated Copper Company reported net earnings equal to only 47 per cent. of the earnings for 1907, while the net results of its subsidiary, the Anaconda Copper Mining Company, for 1908 were equal to only 32 per cent. of the earnings for the previous year ending Dec. 31, 1907. The American Smelting & Refining Company and the Colorado Fuel & Iron Company fared better, the former's earnings for 1908 showing a loss of only 34 per cent. and the latter's one of only 5 per cent. The United States Smelting, Refining & Mining Company for the fiscal year ending December 31, 1908, reported an increase of 45 per cent. in net earnings. The diversity of this company's interests is stated as the reason for the remarkable showing.

Both the steel and the mining industries suffered from a falling off in demand for their products as well as from a sharp reduction in prices. The Bureau of Labor publishes average prices on some of these products as follows:

Table V.—*Decrease in Prices of Steel and Mining Products.*

| | 1908. | 1907. |
|---|---|---|
| Bituminous coal, George's Creek, per ton | $1.44 | $1.54 |
| Connellsville coke, per ton | 1.71 | 2.83 |
| Best bar iron, Pittsburgh, per lb. | 1.46c. | 1.75c. |
| Steel billets, per ton | $26.31 | $29.25 |
| Steel rails, per ton | 28.00 | 28.00 |
| Pig iron, Bessemer, per ton | 17.07 | 22.84 |
| Copper ingots, per lb. | 13.34c. | 21.25c. |
| Lead, pig, per lb. | 4.22c. | 5.52c. |
| Silver bar, per ounce. | 53.50c. | 65.98c. |

For the 29 miscellaneous industries a loss of 18.68 per cent. is shown in net earnings. Classified by manufactures this loss is: Clothing materials, 59.05 per cent.; railway equipment, 28.84 per cent.; foodstuffs, 11.54 per cent.; miscellaneous, 12.38 per cent. The New England Cotton Yarn Company during the year ending September 30, 1908, suffered a loss of 51 per cent. in net earnings; during the year ending December 31, 1908, the American Woolen Company's gross sales and earnings were reduced from $47,378,000 to $29,987,000, equal to 36.7 per cent., while net earnings decreased 62.6 per cent. Manufacturers of railway equipment show a much greater loss in revenues than the railways. The American Car & Foundry Company, with fiscal year ending April 30, and the American Locomotive Company, with year ending June 30, show an aggregate decrease in net earnings of 13 per cent.; the Pressed Steel Car Company and the Railway Steel Spring Company, with fiscal years ending December 31, report an aggregate falling off of 76 per cent. in net earnings. The Pressed Steel Car Company's gross sales and earnings declined from $36,443,000 in 1907 to $8,589,000 in 1908 (76 per cent.); the American Locomotive Company's from $49,515,000 to $37,484,000 (24 per cent.). In food manufactures the American Beet Sugar Company reports an increase of 43 per cent. in net earnings for the year ending March 31, 1909; the Corn Products Company an increase of 1 per cent., year ending February 27, 1909. The Quaker Oats Company, the National Biscuit Company and the American Sugar Refining Company report decreases in net earnings of 17 per cent., 5 per cent. and 26 per cent., respectively, for years ending December, 1908, and January, 1909.

Of 18 miscellaneous industries four companies report increases in net earnings. The National Carbon Co. and the American Agricultural Chemical Co. report slight increases in net earnings in 1908. The International Harvester Co. shows an increase of 15 per cent. and Allis-Chalmers one of 383

per cent. Decreases in net earnings are reported, for National Fire-Proofing, 92 per cent.; National Enameling and Stamping, 81 per cent.; U. S. Cast Iron Pipe & Foundry, 63 per cent.; American Cotton Oil, 47 per cent.; Harbison-Walker Refractories, 41 per cent.; Consolidated Cotton Duck, 36 per cent.; American Hide & Leather, 29 per cent.; Mergenthaler Linotype, 23 per cent.; General Electric Co., 21 per cent.; Union Bag & Paper, 15 per cent.; International Nickel, 15 per cent.; General Chemical Co., 12 per cent.; General Asphalt Co., 2 per cent.; National Lead, 1 per cent.

Taking Sears, Roebuck & Co. as an example of a trading concern, one finds a decrease of 19 per cent. in gross sales, or from $50,723,000 in 1907 to $40,844,000 in 1908, and a decrease of 31 per cent. in net profits, or from $3,606,000 to $2,481,000.

Comparative results for the telegraph and telephone companies are surprising. The decreases or increases in gross and net earnings in 1908 for four companies were:

TABLE VI.—*Decrease and Increase in Telephone and Telegraph Earnings,* (000's omitted.)

| Company. | Year ends. | Gross Amount. | Gross Per ct. | Net. Amount. | Net. Per ct. |
|---|---|---|---|---|---|
| Western Un. Telegraph | June 30. | —$4,274 | —13 | —$2,921 | —46 |
| Mackay Companies ... | Feb. 1. | ..... | .... | — 144 | — 4 |
| American Tel. & Tel... | Dec. 31. | + 6,364 | + 5 | + 2,810 | + 5 |
| Mich. State Telephone | Dec. 31. | + 321 | +10 | — 136 | —13 |

(— Decrease. + Increase.)

A decrease of $144,000 in net earnings of the Mackay Companies represents the decrease in income received on investments in the companies owned. The Western Union Telegraph Co. effected a decrease in operating expenses of only $1,353,000, against a decrease in gross earnings of $4,214,000, thereby reducing net earnings from $6,324,000 in 1907 to $3,403,000 in 1908. The American Telephone & Telegraph Co., on the other hand, increased gross earnings from $120,753,000 to $127,117,000, operating expenses increasing in slightly less proportion than gross and net earnings in like proportion as gross.

In the express field the American Express Co. reported a loss of $206,000 in gross earnings; Wells-Fargo shows a slight gain of $11,000. The American's expenses decreased $24,000; Wells-Fargo's increased $799,000. The decrease in aggregate net income for the two companies is stated in Table III as 8.31 per cent. This calculation includes "other income," so that while aggregate gross earnings decreased only 0.36 per cent., aggregate net earnings from transportation of merchandise decreased 24 per cent.

The Pullman Co. in the report for the year ending July 31, 1908, showed a loss of 2 per cent. in gross, 6 per cent. increase in expenses and 16 per cent. decrease in net earnings.

The utilities in general show a greater stability of earning power in times of business depression than any other industry. In Table III ten gas and electric companies show an increase of 6.43 per cent. in gross earnings and 8.96 per cent. in net. The companies with increases in gross and net earnings are as follows:

TABLE VII.—*Increase in Public Utility Earnings.*

| | Year ends. | Gross, Per cent. | Net, Per cent. |
|---|---|---|---|
| Boston Consolidated Gas..... | June 30. | 1 | 9 |
| People's Gas, Light & Coke..... | Dec. 31. | 6 | 7 |
| Brooklyn Union Gas ..... | Dec. 31. | 8 | 15 |
| American Gas Co.'s..... | Dec. 31. | 4 | 8 |
| Commonwealth Edison ..... | Sept. 30.* | 7 | 18 |
| Niagara Falls Power..... | Dec. 31. | No inc. | Dec., 3 |
| North Shore Electric ..... | Sept. 30. | 24 | 25 |
| Washington Water Power ..... | Dec. 31. | 16 | 33 |
| Philadelphia Electric ..... | Dec. 31. | 5 | 2 |
| Montreal Light, Heat & Power..... | Apr. 30. | 10 | 11 |

*Periods compared are April 1, March 31, 1907; April 1, Sept. 30, 1908.

Gas and electric utilities, like electric railways, were adversely affected in localities where population is concentrated in one industrial pursuit. Thus, the Philadelphia Company, of Pittsburgh, and the Manufacturers' Light & Heat Company, both companies serving Pittsburgh and adjacent territory, show decreases in gross and net earnings in their reports for the year ending December 31, 1908. With respect to the ten companies given it will be noted that with two exceptions the percentage of increase in net earnings is greater than the increase in gross, reflecting the general reduction in prices of materials and supplies, which, as has been pointed out, helped to swell also a small increase in gross earnings of electric railways to a larger increase in net.

The steam railways compare favorably with other corporations in ability to reduce expenses. In few instances do expenses shrink in the same proportion as revenues. The following compilation from reports of corporations whose gross earnings decreased in 1908, is a comparison of the percentage of expenses to earnings:

TABLE VIII.—*Comparison of Operating Ratios.*

| | 1907. Per cent. | 1908. Per cent. |
|---|---|---|
| 164 steam railways ..... | 69 | 71 |
| American Express Company ..... | 98 | 98 |
| Pullman Company ..... | 64 | 69 |
| Western Union Telegraph ..... | 81 | 88 |
| 8 miscellaneous industrials ..... | 89 | 88 |
| U. S. Steel Corporation ..... | 78 | 80 |
| Sloss-Sheffield Steel & Iron..... | 75 | 79 |
| Lackawanna Steel ..... | 82 | 89 |
| Colorado Fuel & Iron ..... | 88 | 87 |
| Anaconda Copper Mining ..... | 81 | 94 |
| Sears, Roebuck ..... | 93 | 94 |

Included in the eight miscellaneous industrials is the International Harvester Co., which reported an increase of $1,703,000 in net earnings in 1908, although gross sales decreased $5,665,000. This company, however, effected a reduction of $7,268,000 in manufacturing and selling expenses. The average percentage for the other seven—the American Woolen, General Electric, National Biscuit, American Locomotive, Pressed Steel Car, General Asphalt and Consolidated Cotton Duck—is 90 per cent. for both years.

For the purposes of this article the income accounts for 1907 and 1908 of 59 large railways of the United States have been analyzed. The systems have been classified by eight groups.

Group I. Eastern trunk lines, including the Pennsylvania Railroad, Pennsylvania Company, New York Central, Lake Shore & Michigan Southern, Michigan Central, Erie, Pittsburgh, Cincinnati, Chicago & St. Louis, Wabash.

Group II. Soft coal carriers, including the Baltimore & Ohio, Chesapeake & Ohio, Cleveland, Lorain & Wheeling, Hocking Valley, Norfolk & Western, Northern Central, Buffalo, Rochester & Pittsburgh, Toledo & Ohio Central, Lake Erie & Western.

Group III. Anthracite coal carriers, including the Philadelphia & Reading, Central of New Jersey, Lehigh Valley, Lackawanna, Delaware & Hudson, New York, Susquehanna & Western, New York, Ontario & Western.

Group IV. Southern Systems, including the Atlantic Coast Line, Central of Georgia, Seaboard Air Line, Southern Railway, Alabama Great Southern, Mobile & Ohio, Georgia, Southern & Florida, Louisville & Nashville.

Group V. Central western Systems, including the Chicago & Alton, Illinois Central, Toledo, St. Louis & Western, Cleveland, Cincinnati, Chicago & St. Louis, Chicago & Eastern Illinois, Chicago, Indianapolis & Louisville, Vandalia.

Group VI. Crop-carrying or Granger roads, including the Atchison, Topeka & Santa Fe, Union Pacific, Chicago, Milwaukee & St. Paul, Burlington, Rock Island, Great Northern, Northern Pacific, Canadian Pacific, Minneapolis & St. Louis, Iowa Central, Colorado & Southern.

Group VII. Southwestern Systems, including the Southern Pacific, Texas & Pacific, Missouri, Kansas & Texas, Kansas City Southern, St. Louis Southwestern, St. Louis & San Francisco, Missouri Pacific.

Group VIII. New England roads, including the New York, New Haven & Hartford and the Boston & Maine.

The line of demarcation for the classification of some roads is not always clearly drawn, and many roads might be compared with systems included in other groups.

A summary of the principal divisions of the income account is given in Table IX on the following page, showing the percentage decrease for 1908, as compared with results in 1907.

In Table IX, column 7, the figures represent not increases in fixed charges, but increases in the proportions that fixed charges bear to total net income. Similarly, the figures in column 8 represent decreases in the proportions that surplus

balances bear to total net income, the margin of safety being the surplus balance remaining out of total net income after fixed charges have been deducted.

Attention has already been directed to the fact that passenger earnings are affected by business depression much less than freight earnings.

Table X.—*Decreases in Earnings.*

| | | Freight, per cent. | Passenger, per cent. |
|---|---|---|---|
| 8 | Eastern trunk lines | 18 | 6 |
| 9 | Soft coal carriers | 11 | 2 |
| 7 | Anthracite coal carriers | 5 | 3 |
| 8 | Southern systems | 8 | Less than 1. |
| 7 | Central Western systems | 9 | 3 |
| 11 | Granger roads | 5 | 4* |
| 7 | Southwestern systems | 6 | 8 |
| 2 | New England roads | 10 | 1 |
| 59 | Systems | 10 | 2 |

*Increase.

The gross earnings from operation of the 59 systems were $2,109,456,000 in 1907. In 1908 they decreased $149,969,000. The decrease in net earnings, amounting to $94,102.000, equaled 26 per cent. of fixed charges for 1908. In the aggregate the eleven Granger roads showed the least falling off in freight traffic (5 per cent.) and an increase in passenger traffic of 4 per cent. In 1907 they earned, approximately, $84,000,000 gross more than the eight eastern trunk lines; in 1908 they earned $141,000,000 more. The eastern trunk lines bore 48 per cent. of the loss in gross earnings, the "coalers" and New England roads bore another 20 per cent., so that territory which produced 45 per cent. of the gross earnings in 1907 bore 68 per cent. of the loss in 1908. The stopping of the wheels of industry makes heavy inroads upon earnings of railways serving territory in which manufactures are concentrated. The effect is again evident in the case of the soft coal carriers as compared with the anthracite coalers, the former losing 11 per cent. in freight traffic, the latter 5 per cent. In 1907 the soft coalers earned over $10,000,000 more freight revenue than the hard coalers; in 1908 this excess was reduced to slightly more than $2,000,000.

Two roads of the 59 increased freight earnings in 1908; 23 increased passenger earnings; eight of the eleven Granger roads increased their passenger earnings:

Table XI.—*Amount of Increase.*

| Road. | Passenger. |
|---|---|
| Boston & Maine | $214,000 |
| Erie | 31,000 |
| Chesapeake & Ohio | 233,000 |
| Cleveland, Lorain & Wheeling | 7,000 |
| Hocking Valley | 30,000 |
| Toledo & Ohio Central | 34,000 |
| Central of New Jersey | 36,000 |
| New York, Susq. & Western ($99,000 freight) | 24,000 |
| Atlantic Coast Line | 196,000 |
| Central of Georgia | 8,000 |
| Louisville & Nashville | 174,000 |
| Toledo, St. Louis & Western | 5,000 |
| Chicago & Eastern Illinois | 39,000 |
| Southern Pacific | 2,096,000 |
| Atchison, Topeka & Santa Fe. | 471,000 |
| Missouri, Kansas & Texas | 65,000 |
| Union Pacific | 1,728,000 |
| Burlington | 152,000 |
| Rock Island | 539,000 |
| Great Northern | 141,000 |
| Northern Pacific | 1,812,000 |
| Canadian Pacific | 371,000 |
| Colorado & Southern ($351,000 freight) | 403,000 |

Against these increases in earnings there are small increases in mileage—*e. g.*, Colorado & Southern, 174 miles; Union Pacific, 136 miles; Southern Pacific, 105 miles; Northern Pacific, 43 miles.

The ability to reduce expenses in proportion to the decrease in revenues was demonstrated most clearly by the eastern trunk lines. Two of the other seven groups increased expenses and five decreased them in less proportion than the falling off in revenues. In the aggregate the eastern trunk lines decreased expenses in direct proportion to decreased earnings. The decreases in earnings and expenses and the ratios of expense reductions to revenue reductions for the individual roads are:

Table XII.—*Reduction of Expenses in Relation to Revenues—Eastern Trunk Lines.*

| Road. | Decrease: In earnings. per cent. | Decrease: In expenses. per cent. | Ratio of decrease, expenses to earnings, per cent. |
|---|---|---|---|
| Pennsylvania R.R. | 17 | 18 | 106 |
| Pennsylvania Co. | 23 | 28 | 122 |
| New York Central | 10 | 12 | 120 |
| Lake Shore | 10 | 9 | 90 |
| Michigan Central | 13 | 17 | 131 |
| Erie | 9 | 7* | 78 |
| Pittsburgh, C., C. & St. L. | 18 | 22 | 122 |
| Wabash | 6 | 4 | 67 |
| Average | 14 | 14 | 100 |

*Increase

In sharp contrast are the increased expenses of the Granger roads (2 per cent.) and the southwestern systems (3 per cent.), although these two groups show the smallest reductions in gross earnings—2 per cent. for the Grangers and 6 per cent. for the southwestern systems. The ratios of decrease in expenses to decrease in earnings by groups are:

Table XIII.—*Reduction of Expenses in Relation to Revenues.*

| Group. | Ratio of decrease, expenses to earnings, per cent. |
|---|---|
| Eastern trunk lines | 100 |
| Soft coal carriers | 33 |
| Anthracite coal carriers | 40 |
| Southern systems | 83 |
| Central Western systems | 43 |
| Granger roads | 100* |
| Southwestern systems | 50* |
| New England roads | 20 |
| Average 59 systems | 57 |

*Increase.

The heaviest decrease (23 per cent.) in expenses of the eastern trunk lines was effected in maintenance of way and structures. In Table XIV are shown the percentages of increase and decrease in the chief divisions of operating expenses, where it will be noted that the anthracite coal carriers increased expenses for maintenance of equipment and general expenses, excluding taxes, the Granger roads for maintenance of equipment and conducting transportation, the southwestern systems for maintenance of way and structures and conducting transportation, the New England roads for maintenance of way and structures and equipment.

It will be noted that general expenses, including taxes, increased for all groups except the Granger and New England roads, but that the account decreased in all cases except that of the anthracite coalers when taxes are eliminated. The increase in taxes was general throughout the country, the New England group alone showing a decrease, which is assigned to

Table IX.—*Decreases in Income Account of Steam Railways.*

| | | Column 1. Total earnings from operation, per cent. | Column 2. Total expenses for operation, per cent. | Column 3. Net earnings from operation, per cent. | Column 4. Income: Other, per cent. | Column 5. Income: Total net, per cent. | Column 6. Fixed charges, per cent. | Column 7. Proprtn chrgs to total net income, per cent. | Column 8. Margin of safety for fixed charges, per cent. |
|---|---|---|---|---|---|---|---|---|---|
| 8 | Eastern trunk lines | 14 | 14 | 14 | 3 | 28 | 3* | 44* | 36 |
| 9 | Soft coal carriers | 9 | 3 | 22 | 35* | 16 | 9* | 29* | 20 |
| 7 | Anthracite coal carriers | 5 | 2 | 10 | 27* | 5 | 1* | 7* | 5 |
| 8 | Southern systems | 6 | 5 | 9 | 11* | 6 | 6* | 13* | 30 |
| 7 | Central western system | 7 | 3 | 16 | 7 | 13 | 4* | 20* | 20 |
| 11 | Granger roads | 2 | 2* | 12 | 21* | 8 | 12* | 19* | 9 |
| 7 | Southwestern systems | 6 | 3* | 23 | 9 | 22 | Less than 1 dec. | 28* | 25 |
| 2 | New England roads | 5 | 1 | 17 | 30* | 6 | 25* | 34* | 49 |
| 59 | Systems | 7 | 4 | 15 | 9* | 15 | 6* | 26* | 19 |

*Increase.
Note.—In Column 2 the total expenses for operation include taxes.

the New York, New Haven & Hartford. The increases for the other groups vary widely, that of the eastern trunk lines being 6 per cent.; soft coal carriers, 7 per cent.; anthracite coalers, 2 per cent.; southern systems, 18 per cent.; central western systems, 2 per cent.; Granger roads, 9 per cent.; southwestern systems, 24 per cent. Of the southern systems the Georgia, Southern & Florida shows a 50 per cent. decrease, and the other seven roads in the group aggregate a total increase of $949,000, of which $398,000 is assigned to the Southern Railway and $217,000 to the Atlantic Coast Line. In the Granger group big increases are reported—$742,000 for the Santa Fe, $368,000 for the Union Pacific, $237,000 for the Great Northern, $319,000 for the Northern Pacific and an aggregate of $1,580,000 for the group.

Part of this increased taxation is due to an increase in mileage. But the other part? A pertinent question, for we read here the evidence of the increasing valuation of railways as measured by the tax assessors. If railway property is increasing in value for purposes of taxation, should it not also increase for purposes of yielding a return on its value? But we find tax assessors writing up values and railway commissions writing down rates. It sounds paradoxical. Following is a statement of percentages of decrease in the chief divisions of operating expenses:

TABLE XIV.—*Increases and Decreases in Operating Expenses.*

| | | In per cent. | | | | |
|---|---|---|---|---|---|---|
| | | Maintenance | | | General expenses | |
| | | Way & structures. | Equipment. | Cond. trans. | Excldg taxes. | Incldg. taxes. |
| 8 | Eastern trunk lines | 23 | 14 | 13 | 1 | 3• |
| 9 | Soft coal carriers | 5 | 4 | 3 | 2 | 3• |
| 7 | Anthracite coal carriers | 6 | 8• | 6 | 2• | 2• |
| 8 | Southern systems | 12 | 3 | 6 | 6 | 6• |
| 7 | Central Western systems | 10 | 6 | —1 | 2 | —1• |
| 11 | Granger roads | 2 | 2• | 6• | 20 | 4 |
| 7 | Southwestern systems | 4• | 4 | 4• | 7 | 7• |
| 2 | New England roads | 2• | 11• | 4 | —1 | 3 |
| 59 | Systems | 8 | 4 | 3 | 8 | 1 |

•Increase.

The reader will have noted from Table IX that with the exception of the eastern trunk lines the decrease in net earnings from operation were reduced through increases or comparatively smaller losses in "other income," so that the percentages of decrease in "total net income" are uniformly less than the percentages of decrease in "net earnings from operation," with the one exception above mentioned.

The increase in "other income" for the 59 systems was $10,000,000 in round numbers, with 34 per cent. assigned to income from investments and 66 per cent. to income from all other sources.

For purposes of comparison, increases in "other income" are apportioned as follows:

TABLE XV.—*Increases in "Other Income."*

| | Group. | Income from investment, per cent. | All other, per cent. | Tot'l "other income," per cent. |
|---|---|---|---|---|
| 8 | Eastern trunk lines | 7• | 2 | 3• |
| 9 | Soft coal carriers | 18 | 70 | 35 |
| 7 | Anthracite coal carriers | 3 | 44 | 27 |
| 8 | Southern systems | 2 | 26• | 11 |
| 7 | Central Western systems | 2 | 24• | 7• |
| 11 | Granger roads | 27 | 7 | 21 |
| 7 | Southwestern systems | 6• | 20• | 9• |
| 2 | New England roads | 10• | 49 | 30 |
| 59 | Systems | 4 | 22 | 9 |

•Decrease.

The Pennsylvania Railroad, the Pennsylvania company, the New York Central and the Lake Shore suffered an aggregate loss of $2,600,000 in income from investments. The Baltimore & Ohio gained $850,000, the sources of increase not being revealed in the annual report. Among the anthracite coalers the New Jersey Central reported $250,000 increase, the Delaware & Hudson $300,000 decrease. In the southern group the Atlantic Coast Line and the Southern Railway report increases of $300,000 and $650,000, respectively. In the central west the Illinois Central shows a loss of $450,000. The Union Pacific, the Rock Island, the Northern Pacific and the Canadian Pacific report an aggregate gain of $5,925,000 in income from investments. The Southern Pacific, the Missouri Pacific and the New York, New Haven & Hartford show an aggregate loss of $950,000.

In considering the increase in income from investments two factors must be taken into consideration, for it does not follow that the rate of income increased with the aggregate amount of income. First, the holdings of the 59 companies increased $112,000,000 in 1908; second, the fixed charges other than interest increased 3 per cent., indicating that at least part of the income from investments is offset by payments made by guaranteeing companies to meet deficiencies on stocks and bonds of subsidiaries, of which the guarantors were whole or in part owners. The conclusions are drawn from the following table:

TABLE XVI.—*Analysis of Increase in "Other Income."*

| | Group. | Fixed charges | | Amt. of investments increase, per ct. | Income on investm'ts. | |
|---|---|---|---|---|---|---|
| | | Interest increase, per ct. | Other increase, per ct. | | 1907, per ct. | 1908, per ct. |
| 8 | Eastern trunk lines | 9 | 5• | 3• | 5.53 | 5.38 |
| 9 | Soft coal carriers | 7 | 23 | 20 | 4.84 | 5.01 |
| 7 | Anthracite coal carriers | 1 | —1• | 2• | 2.33 | 2.52 |
| 8 | Southern systems | 6 | 4 | 17 | 3.66 | 3.67 |
| 7 | Central Western systems | 9 | 9• | 50 | 4.30 | 2.97 |
| 11 | Granger roads | 9 | 25 | —1 | 2.90 | 3.66 |
| 7 | Southwestern systems | 1 | 6• | 10 | 2.20 | 1.87 |
| 2 | New England roads | 30 | 22 | 24 | 3.52 | 2.53 |
| 59 | Systems | 7 | 8 | 5 | 3.74 | 3.71 |

•Decrease.

It will be noted that the soft coal carriers and the Granger roads, with increases of 18 per cent. and 27 per cent., respectively, in income from investments, show increases of 23 per cent. and 25 per cent., respectively, in "other" fixed charges. The soft coalers both increased their holdings and got a higher rate of income, while the Granger roads, as a group, made the gain almost wholly by getting a higher rate of return, the amount of their holdings increasing by less than 1 per cent.

Space will not allow the exposition of changes in the holdings of the individual companies, except to mention some of the roads that increased their investments: Pennsylvania Railroad, Baltimore & Ohio, Chesapeake & Ohio, Southern Railway, Louisville & Nashville, Illinois Central, Toledo, St. Louis & Western, Union Pacific, Chicago, Milwaukee & St. Paul, Southern Pacific, Missouri, Kansas & Texas, Missouri Pacific, New York, New Haven & Hartford. It is impossible to discover from many of the reports whether the securities held are capital assets or whether they represent the investment of surplus funds.

Among the larger bond and stock issues listed on the New York Stock Exchange during 1908, wholly or in part for the purpose of acquiring securities, were the Colorado & Southern refunding and extension 4½s, $12,740,000; the Delaware & Hudson first and refunding 4s, $13,309,000; the Pittsburgh, Cincinnati, Chicago & St. Louis consolidated guaranteed 4s, Series G, $6,000,000; the Union Pacific 20-year convertible 4s, $1,500,500, and the Great Northern preferred stock, $58,271,900. The total amount of railway bonds listed aggregated $506,160,000; stocks, $200,502,600, against $267,992,000 bonds, and $146,750,800 stocks in 1907.

The reader who has followed the foregoing figures and discussion is now brought to the investor's point of view. His security is best illustrated by comparing the margin of safety for fixed charges.

TABLE XVII.—*Comparison of Margin of Safety for Fixed Charges.*

| | | 1907, per cent. | 1908, per cent. |
|---|---|---|---|
| 8 | Eastern trunk lines | 55 | 35 |
| 9 | Soft coal carriers | 59 | 47 |
| 7 | Anthracite coal carriers | 56 | 53 |
| 8 | Southern systems | 30 | 21 |
| 7 | Central Western systems | 50 | 40 |
| 11 | Granger roads | 68 | 62 |
| 7 | Southwestern systems | 53 | 40 |
| 2 | New England roads | 41 | 21 |
| 59 | Systems | 57 | 46 |

It is hardly possible to establish a relation between fluctuations in earnings and income values of high-grade bonds, or even high-grade stocks. Of companies whose financial strength

enables them to tide over a lean year with dividends paid out of a surplus accumulated from the earnings of fat years some connection, however, is evident. Thus, we find the Pennsylvania Railroad's consolidated 4s of 1943 selling at 101 on January 3, 1907, and at 103¼ on December 31 of the same year, in spite of decreasing earnings, whereas the People's Gas Light & Coke refunding 5s of 1947 sold at 90 and 103⅞ and the Brooklyn Rapid Transit 5s of 1945 at 92 and 102½ on the same respective days. When put on an income basis the effect is more apparent:

| | Jan. 3, 1907, per cent. | Dec. 31, 1907, per cent. |
|---|---|---|
| Penn. R.R. Cons. 4s, 1943 | 3.95 | 3.85 |
| People's G., L. & Coke Ref. 5s, 1947 | 5.60 | 4.80 |
| Brooklyn Rapid Transit 5s, 1945 | 5.50 | 4.85 |

The effect of a hardened money market is apparent, but it is also obvious that stability of earnings stiffened prices of public utility bonds to a greater extent than the single factor of hardened money rates stiffened prices of steam railway issues.

We may expect in the future, especially with the continued growth of electric railways, keener competition for investors' capital between steam railways and public utilities, with important advantages in favor of the latter.

## RIEGLER CONCRETE TIE.

The accompanying photographs and drawings show a tie invented by L. J. Riegler, Pittsburgh, Pa., of the Pennsylvania Lines West. Some of them have been in service on one of the busiest high-speed tracks of these lines for a little less than two years, without showing signs of deterioration.

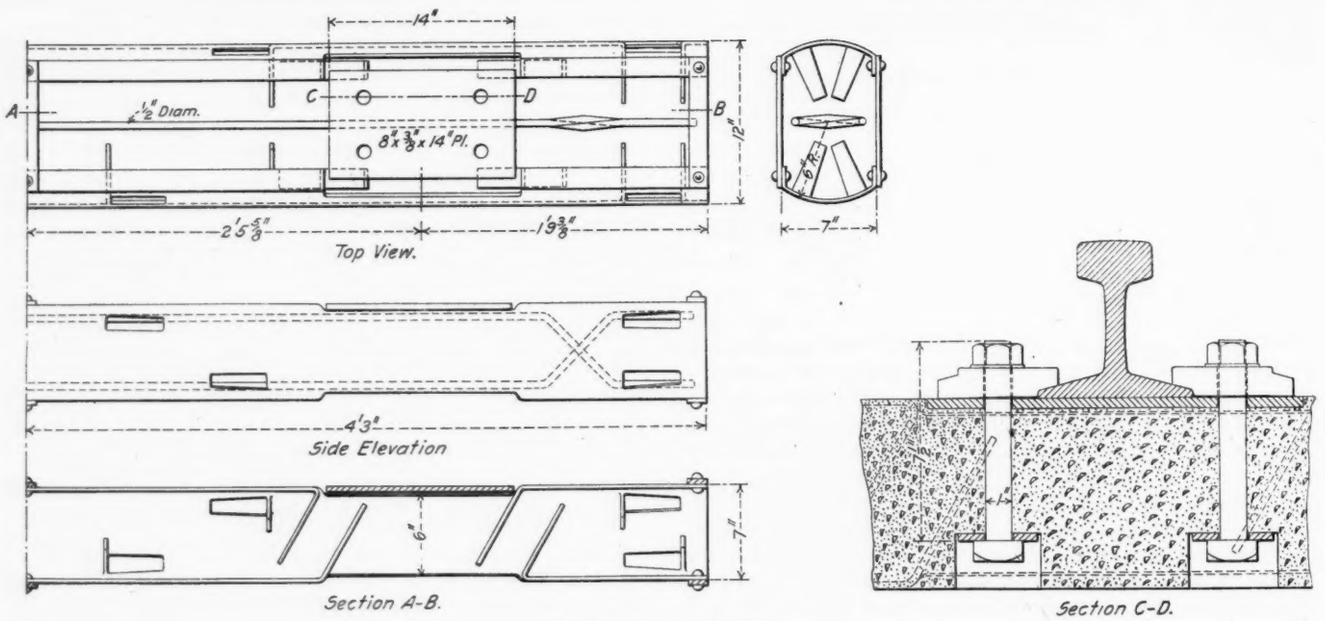
The ties are made of concrete incased in metal shapes, as shown, ⅜-in. thick, with two ½-in. round reinforcing rods running longitudinally through the tie. The metal sides have strips punched out, which are bent inward and imbedded in the concrete. The metal sides are designed to be pressed into shape. The rail bears on flat plates, which in turn rest on the concrete, the metal sides at this point being cut away to prevent metallic contact where electric block signals are in use. The strips thus cut from the upper and lower flanges are bent down and up, respectively, to engage the concrete.

The ties have a large bearing surface and 15 are used for a 33-ft. rail, instead of 18 standard wooden ties. The ties have rounded sides, which assist in distributing the downward thrust over a short distance on each side of the tie, and the reaction assists in holding the tie from slewing, all the ties remaining as first placed at right angles to the track.

The weight of the complete tie is about 850 lbs. It is proposed to cast a ring in the end to which a short rope can be attached for hauling into the track.

Riegler Ties in Track.

Riegler Tie at Joint.




Riegler Concrete Tie.

## REPORT OF THE INTERSTATE COMMERCE COMMISSION.

The Interstate Commerce Commission has submitted its twenty-third annual report to Congress. The report gives the following summary of mileage and earnings for the years ended June 30:

| | 1909. | 1908. |
|---|---|---|
| Average mileage operated | 233,003 | 228,165 |
| Operating revenue | $2,494,115,589 | $2,461,521,345 |
| Operating expenses | 1,662,102,172 | 1,721,327,155 |
| Taxes | 89,026,226 | 83,775,869 |
| Operating income | 742,987,191 | 656,418,321 |

Reduced to a per mile basis, the foregoing items are stated as follows:

| | 1909. | 1908. |
|---|---|---|
| Operating revenues | $10,704 | $10,788 |
| Operating expenses | 7,133 | 7,544 |
| Taxes | 382 | 367 |
| Operating income | 3,189 | 2,877 |

The report says that much of the commission's time and efforts continue to be given to the administrative interpretation of the act for the guidance of shippers and carriers, its policy being to decide all cases of general interest through conference rulings, distributed for general information, thus gradually developing a comprehensive code of rules. The commission has been able to keep abreast of the current work involved in the hearing and determination of complaints, general correspondence and the enforcement of the safety appliance and kindred laws, and encouraging progress has been made toward the accomplishment of important reforms directed or authorized by the amendments of 1906, such as the formulation of a uniform accounting system for carriers by railway, and of rules intended to secure the simplification of tariff construction.

Since the commission's last report to Congress it has decided 591 cases instituted by formal complaint and answer and 197 cases have been disposed of in other ways. Thus a total of 788 cases have been removed from the docket. During the same period, 1,097 formal proceedings have been instituted of which seven were instituted by the commission upon its own motion. The commission has adopted a new rule for the consolidation under one docket number of all cases involving substantially the same subject matter. The work in hand now appears to be somewhat less and is certainly not greater, than it was a year ago, although the actual number of complaints filed in 1909 is 98 per cent. greater than the number filed in 1908.

The commission asks for amendments to the existing law, most of them similar to amendments asked for in previous reports. Physical valuation, power in the commission to suspend the effectiveness of a change in rate pending a hearing, unrestricted discretion on the part of the commission to establish through routes and joint rates, power to prescribe the conditions under which traffic may be routed by the shipper, specific authority to institute proceedings, control over railway capitalization and creation of stocks and bonds and broader authority to prescribe and enforce "general regulations relating to the movement of traffic" are the chief legislative grants of authority asked for by the commission.

The report says further:

"It seems appropriate to refer in this report to the adoption of a uniform code of car demurrage rules by the National Association of Railway Commissioners. * * *

"Perhaps the most characteristic features of the code are (1) the tendency to limit 'free time' to the actual requirements of the consignor and the consignee, and (2) the refusal to give recognition to rules which have been employed as instruments of discrimination. The code was adopted by the National Association of Railway Commissioners by a large majority, and has recently been endorsed by the commission. Although these rules have encountered a certain amount of opposition, there are indications that they will be made generally effective throughout the United States as contemplated. A number of the state commissions, as well as several of the leading car demurrage bureaus, have already announced their intention to put the uniform code into immediate effect.

"It has been estimated by competent authority that the general adoption and enforcement of demurrage rules allowing the smallest measure of 'free time' consistent with the needs of the public will be equivalent to the addition of 100,000 cars to the country's available car supply. If this effort to standardize car-demurrage regulations should meet with the success that is now promised, there is good reason for the belief that the efficiency of carriers will be greatly promoted, and that, incidentally, many unlawful advantages which powerful shippers have been able to secure through loose car service rules will be eradicated."

### DIVISION OF PROSECUTIONS.

"Since December 1, 1908, 35 indictments for criminal violations of the acts to regulate commerce have been returned. Eight of these indictments are joint, two defendants being included in each case.

"Since December 1, 1908, 42 prosecutions have been concluded. Of this number, nine were upon joint indictments, eight of such indictments being against two defendants and one being against three defendants.

"Since December 1, 1908, 29 penalties have been assessed on pleas of guilty. The 29 penalties so assessed have ranged in amount from $100 to $15,000, the aggregate being $92,950. In the same period two verdicts of guilty have been rendered, six indictments have been dismissed, four convictions have been sustained by appellate courts of final jurisdiction, one judgment has been reversed by an appellate court and four verdicts of acquittal have been rendered.

"The sum of $304,233 has been collected during the year in fines for criminal violations of the act by carriers and shippers. * * *

"It is believed that violations of the act are decreasing in number. The year's work has developed, however, all the forms of wrongdoing known in previous years. Of the 35 indictments returned during the year, six are for the wrongful use of passes, two for the unlawful transportation of high explosives upon passenger trains, while the remainder are for giving and receiving concessions and rebates in one form or another. During the present month of December, 1909, 11 indictments have been returned in the western district of Kentucky, all of which recite the giving of rebates by secret payments after the correct rates had been paid by the shippers. * * *

"The year has shown no decrease in the more insidious forms of rebating resulting from arrangements legal in every respect except in the result produced. A number of complaints are in hand concerning the leasing of property by carriers to shippers for a nominal rental, with a further agreement that all shipments made by the lessees shall be routed over the lines of the lessors. The ownership of shipping corporations by carrying corporations, having been held by the Supreme Court not to be in violation of the commodities clause, still continues and gives rise to many discriminations. It becomes increasingly evident that complete freedom from discrimination can be secured only by a complete separation of the business of transportation from all other businesses. The evils most difficult to detect and prove to-day are those arising from the identification of ownership of carriers and shippers, and those arising from the pretense that services performed by shippers for themselves are in reality services for the carriers, to be paid for by the latter. The lighterage situation in the harbor of New York, between the trunk lines and certain shippers of sugar, and the various industrial railway arrangements with divisions of joint rates, are examples of the identification of shippers and carriers which operate to remove certain shippers from the necessity to pay the full published rates. As soon as a shipper secures an arrangement by which he is to furnish a portion of the service

of transporting his shipments, with a right to an agreed portion of the freight rate, it becomes impossible to determine whether or not the net cost to him is the same as other shippers are forced to pay. In many cases, however, it is entirely possible to say that such shippers have a competitive advantage in the market."

Referring, among other cases involving the powers of the commission, to the so-called Burnham-Hanna-Munger case, the commission disavows the intention ascribed to it by the Circuit Court of establishing "trade zones" which should be tributary to trade centers and declares that, in the case in question, the commission could only act in reference to the rate of which complaint had been made, namely, that on certain merchandise from the Atlantic seaboard to Kansas City. It was the duty of the carriers, says the commission, to adjust their intermediate rates from Pittsburg and Detroit accordingly.

SAFETY APPLIANCES.

"The statistical reports of the commission show that in 1893 the number of men employed in coupling and uncoupling cars for each one killed was 349, while in 1908 the number employed for each one killed was 983. The number of men employed in coupling and uncoupling cars for each one injured in 1893 was 13, while in 1908 it was 62. Stated in another way, the number of men killed in coupling and uncoupling cars for each 1,000 employed was three in 1893 and one in 1908. The number of injuries for each 1,000 men employed in this service was 77 in 1893 and 16 in 1908.

"That it is in no sense impossible for a carrier to keep its car couplers in complete repair as contemplated by the statute is evidenced by the fact that inspectors of the commission have gone over a large railway system without finding any defective couplers.

"As pointed out in previous reports of the commission, however, the law is too limited in its scope to afford that full measure of protection to which railroad employees are entitled. All the appliances included in the standards for the protection of trainmen are examined by our inspectors and their condition noted, but as the majority of such appliances are not covered by the law and no penalty is attached to their use in a defective conditions, it is not possible to exercise the same supervision over them that can be exercised over the particular appliances covered by the law. * * *

RAILWAY ACCIDENTS.

"The falling off in the number of casualties to passengers and employees on railways noted in the last annual report of the commission, continued to manifest itself in the year ending June 30, 1909. As shown by the following summary, the number of passengers killed in train accidents was 131 in 1909, as compared with 165 for the previous year. There is also a decrease in the number of employees killed and injured. The number of employees killed in coupling accidents decreased from 239 in 1098 to 161 in the year just closed, a reduction of 32 per cent.

| | 1909 | | 1908 | |
|---|---|---|---|---|
| Passengers. | Killed. | Injured. | Killed. | Injured. |
| In train accidents | 131 | 5,865 | 165 | 7,430 |
| Other causes | 204 | 6,251 | 241 | 5,215 |
| Total | 335 | 12,116 | 406 | 12,645 |
| Employees: | | | | |
| In train accidents | 520 | 4,877 | 642 | 6,818 |
| In coupling accidents | 161 | 2,353 | 239 | 3,121 |
| Overhead obstructions, etc... | 76 | 1,229 | 110 | 1,353 |
| Falling from cars, etc. | 481 | 10,259 | 668 | 11,735 |
| Other causes | 1,218 | 33,086 | 1,699 | 33,317 |
| Total | 2,456 | 51,804 | 3,358 | 56,344 |
| Total, pass. and employees.. | 2,791 | 63,920 | 3,764 | 68,989 |

"The diminished volume of traffic that has been moved by the railways during the slack period which began in 1907 must not be forgotten. It cannot be said that extra precautionary measures have been taken for the prevention of accidents, and with the increased volume of business which from present appearances the railways will be called upon to handle during the coming year, an increase in railway accidents is not improbable.

"Mere statistics only call attention to the necessity of preventing accidents; they afford no help in solving the problem. Some kinds of accidents, notably collisions of trains, are due in considerable measure to wrong systems of operation or to defective discipline or education of the men; evils which are not cured either by a falling off in volume of business or by dismissing the less careful employees. The accident records, when studied for details of causes, show this year the same need for the correction of faults in operating methods which has been shown in other years, and which has been set forth in former reports of the commission.

THE HOURS OF SERVICE LAW.

"As stated in its last annual report, the means adopted by the commission to ascertain whether or not the provisions of the hours of service law were being observed was a requirement that carriers should file monthly reports, under oath, showing the excess service of employees and the causes therefor. The total number of roads served with this order was 1,237. * * * All roads in the United States operating 300 miles or more of track are now filing hours-of-service reports, with the following exceptions, viz.:

"Boston & Albany; Boston & Maine; Central of New Jersey; Chicago, Indiana & Southern; Chicago, Indianapolis & Louisville; Cleveland, Cincinnati, Chicago & St. Louis; Delaware, Lackawanna & Western; Erie; Grand Rapids & Indiana; Lake Shore & Michigan Southern; Lehigh Valley; Michigan Central; Nashville, Chattanooga & St. Louis; New York Central & Hudson River; New York, New Haven & Hartford; New York, Ontario & Western; Pennsylvania Company; Pennsylvania Railroad; Peoria & Eastern; Pere Marquette; Philadelphia & Reading; Pittsburg, Cincinnati, Chicago & St. Louis; Rutland Railroad.

## PENSIONS ON THE NEW YORK CENTRAL.

President W. C. Brown, of the New York Central, in making the formal announcement of the pension plan which the directors of the company have ordered to go into effect on January 1, says that it is hoped that for the employees who receive the lowest compensation more liberal provision can be made hereafter than is made in the present plan. Mr. Brown takes "much pleasure and satisfaction" in issuing this notice, and hopes that it will be taken, as it is given, as an expression of appreciation of faithful and efficient service in the past. The New York Central has appropriated $225,000 for the first year; the Lake Shore & Michigan Southern $85,000; the Cleveland, Cincinnati, Chicago & St. Louis $70,000, and the Michigan Central $56,000. The usual proviso is inserted in the rules that, if necessary to keep within the limit of the appropriation in any year, the directors may reduce the rate of the pensions.

The principal features of this pension system were given in the *Railroad Age Gazette* of Nov. 12 and 19, pages 945 and 979. All employees are to be retired at the age of 70, even though they may not have served the necessary term (ten years) to entitle them to a pension. Employees who wish to be retired before the age of 70, will have to submit to examination by a physician. In computing the length of time that an employee has been in the service, his service on any of the roads owned, leased or operated by the New York Central will be counted, provided, in the case of a transfer from one company to another, the transfer was not because of dismissal or suspension, and was approved by the employing officers of both lines. A temporary lay-off, of not over one year, on account of reduction of force, and suspensions for discipline, will not be treated as causing a break in the continuity of service.

# General News Section.

A trainload of coal drawn over the Virginian Railway on Friday last, consisting of 120 steel coal cars, with an engine and caboose, is said to have been 5,286 ft. long, or 6 ft. more than a mile. The weight of the coal in the train is given as about 6,000 tons.

The Norfolk & Western will soon have telephones in use for train despatching throughout its main line from Norfolk, Va., to Columbus, Ohio, about 700 miles. On some divisions the telephones have been in use many months and the others are to be equipped soon. Western Electric apparatus will be used.

The New York State Public Service Commission, Second District, reports for the month of September last 82 per cent. of the passenger trains in the state arriving on time at the terminals of divisions. The average delay for each train run was 4.2 minutes; average delay for each late train, 24.3 minutes.

President Winchell of the Frisco lines has announced that the United States Express Company on January 1 will begin the operation of express service on the St. Louis & San Francisco, the Kansas City, Fort Scott & Memphis, the Kansas City, Memphis & Birmingham, the Fort Worth & Rio Grande, the St. Louis, San Francisco & Texas, the Paris & Great Northern, the Colorado Southern, New Orleans & Pacific, the Beaumont, Sour Lake & Western and the Orange & Northwestern.

The Railroad Commission of Texas reports the following equipment in use on railways of that state: Locomotives, 1,887; passenger cars, 1,169; flat cars, 44,582, and other cars, 3,655. Commissioner of Labor Statistics Meyers, after a trip to Fort Worth, Childress, Wichita Falls and Tyler, reports that the railways are only partially complying with the law requiring them to have sheds to protect their car repairers from the weather.

The third example of carelessness in the Chicago & North Western's illustrated series is a picture of an express train passing a station at full speed while a local passenger train is standing at the platform. The lecture accompanying the picture says: "Give the other man a chance; do not confuse and frighten passengers who are nervous about losing their train; stop your engine far enough away to let them feel assured of their safety.

To most travelers on our trunk line railways the principal thing noticed about the signs warning trespassers to keep off the track is that there are more of them than is necessary. At any rate, there would seem to be more than enough to warn all except the most willful trespassers. The Pennsylvania, however, is putting up many more such signs. It appears that in certain prosecutions begun by the road the alleged absence or insufficiency of the signs was used to advantage by the defendants.

Directors of the Northern Securities Co. have declared a dividend of 2½ per cent., payable January 10. Last year the dividend, which is declared annually, was 4 per cent. For each of the three years preceding that it was 5 per cent. When the Northern Securities Co. was declared a trust in violation of the law, the capital stock was reduced from $395,100,000 to $3,954,000, or 39,540 shares. These have been quoted on the New York curb market lately at from 106 to 108, with the last sale recorded at 106.

Beginning January 1 through tourist cars will be run from Chicago to Tacoma and Seattle by the Chicago & North Western, the Union Pacific, the Oregon Short Line, the Oregon R. & N. and the Northern Pacific, the last named being used from Portland to Tacoma under the trackage agreement made by the Harriman and Hill lines. From Tacoma to Seattle the trains will run over the line owned jointly by the U. P. and the Chicago, Milwaukee & Puget Sound. It is also announced that the Southern Pacific's "Shasta Limited," which now runs between Portland and San Francisco, will be extended to Tacoma and Seattle and tht other passenger trains will be run through by the Harriman Linues between Portland and Puget Sound.

The directors of the Chicago & North Western have amended the pension regulations of the company so that hereafter the smallest pension will be $12 a month. This will increase the pensions of about 125 of those now on the list. At one per cent. for each year of service twelve dollars would be the pension for an employee who had worked at $36 a month and had been in the service 33 years, 4 months. By the new regulation such a man will receive the $12 even when his term of service has been much shorter.

The finance committee of the United States Steel Corporation has voted to offer the employees of the corporation the privilege of subscribing to 25,000 shares of preferred stock at $124 a share. This is about the market price, and is a higher price than has ever been asked of the employees before. At the same time it was voted to distribute $2,000,000 in common or preferred stock and cash to the employees in bonuses. Employees of the corporation at the present time own preferred and common stock for which they have paid about 17½ millions; and this stock is now worth at market prices about 26 millions.

According to a press despatch from San Francisco "The Order of Railway Employees" is now a live organization on the Pacific coast and has 30,000 members. The chief officer is Louis H. Ledger, a brotherhood engineman of the Atchison, Topeka & Santa Fe, and the treasurer is Samuel P. Veatch, a brotherhood conductor of the Southern Pacific. Other representatives are J. O. Hand, E. M. Armstrong, E. C. Jordan and Charles Diffenbaugh, of the Brotherhood of Locomotive Enginers, and Thomas D. Manhire, head of the street car men of San Jose. Aside from the last named and the treasurer all of the leaders seem to be members of the Brotherhood of Locomotive Engineers.

Press despatches say that the Brotherhood of Railroad Trainmen on Monday last notified all of the railways east of the Mississippi river that increases in wages would be asked for on January 20; that is in one month. On the Lehigh Valley, according to the New York newspapers, the locomotive enginemen have just renewed their agreement with the company for one year beginning January 1, 1910. In this agreement the principal change from present conditions is in allowing overtime on trips which consume more than 10 hours. Heretofore the standard maximum time for a trip has been 12 hours. Some of the Lehigh Valley enginemen say that between Jersey City and Easton the passenger runners will receive $5.60 in place of $5; between Easton and Sayre, $15 instead of $14; and runners of pushers will receive $3.75 for ten hours instead of $3.50 for 12½ hours. The enginemen of the Pennsylvania Railroad are said also to have reached an amicable agreement with the officers of the company. Under this agreement slight increases in wages have been granted on a few runs.

Officers of the Order of Railway Conductors say that conductors as well as trainmen have voted by a large majority to ask for increases.

Gifford Pinchot, chief forester of the United States, held a conference in Chicago December 14, with a number of officers of railways regarding the matter of forest conservation. Mr. Pinchot urged upon the railways the use of steel or concrete ties as a means toward the conservation of the timber resources of the country. E. O. Faulkner (A. T. & S. F.) and A. S. Baldwin (I. C.) spoke of the forestry work that is being done by their roads and also of the forestry work that is being done by the government. Mr. Faulkner expressed dissatisfaction with the elaborate figures submitted by the government foresters regarding the saving that would follow investment by the railways for the production of their own timber supplies. Mr. Baldwin said that the experience of the Illinois Central had shown that tie-growing is practicable. The re-

sults gained, however, have not been wholly satisfactory. It had found in Illinois that the kind of trees it tore up and threw away are the ones that the soil is adapted to. At Harahan, La., it had had better success with tie growing. Planting was begun there seven years ago. There is now a good growth of fence posts and by the eighteenth year it is expected that timber big enough to be cut for railway ties will be available. H. U. Mudge, president of the Rock Island, suggested that timber planting should be done by the government rather than by the railways. It might be that 50 years from now the government will own all the railways, and therefore the government should supply its own ties by conserving its own forests instead of looking to the railways to take the initiative. If it takes 50 years for a tree to grow, he said, it is too much to ask the railway to invest money now, the interest on which would be compounding all the time, to meet possible needs so far in the future. Conditions may change entirely. The government can borrow money at a lower rate of interest than the railways can, and by the issue of 50-year bonds could undertake the development of forests profitably. Mr. Pinchot said he would be glad to see the government take steps to finance the movement to conserve and build up forests, but unfortunately Congress takes a different view, and the fact remains that sooner or later the railways will have to face a shortage of timber for ties.

The Isthmian Canal Commission, as announced some time ago, is selling the old French machinery which was left along the line of the canal and is bringing about 1,500 tons of old iron monthly to New York City. It is said that about 100,000 tons are to be brought, including old locomotives, dump cars, tanks, boilers, barges and all sorts of machinery. Each French locomotive yields from $400 to $600 worth of copper. Old steel rails will be kept in Panama to be used to reinforce concrete. Some dredges had been so completely buried in the earth by floods that they were good enough to save and are now in use. Since the United States Government took hold of the work about $1,000,000 worth of French machinery has been utilized in the work of digging the canal, but a good deal of this is now going into the scrap heap.

### Judge Crosscup on "Regulation of Corporations."

Judge Peter S. Grosscup of the United States Circuit Court at Chicago, W. J. Calhoun, United States minister to China, and Patrick F. Murphy of New York, at the annual dinner of the Illinois Manufacturers' Association in Chicago on December 14, discussed corporations. Judge Grosscup said in part:

"It seems to me that this program might be followed: First, ascertain in a spirit of fairness the value of these transportation lines. Now, in ascertaining the value of a transportation line, I would not take the cost of reproduction as the measure. Would any manufacturer in this room take it as the measure of the value of his plant? His plant is the result of his experimentation, is the result of his having built up and torn down and thrown away and built up again. But that is not enough. The railway company, like yourself, wants some prospect in the future. Where shall that prospect reside? With a railway as with the rest of the world, the cost of things to them depends upon the growth of population that they serve.

"Now I would make the reduction of rates the incentive for increased dividends. Let the railway that can reduce its rates increase its dividends. Take the classification and the tariff sheets of the present time and in a period hereafter, say three years, make a comparison with the tariff sheets of the present time and ascertain what the public has saved by a reduction of rates on that railway during that period; and out of the money accumulated by the railway company declare them an extra dividend out of that saving through reduction.

"I would add to that—because it is a just part of what the community ought to pay the transportation companies for their service—enough to build up an insurance fund and an old age pension fund for the railway company's employees.

"And I would add to that, too, something that at the end of every given period could be apportioned among the employees in some just measure, say according to their years of service and their wages, or something of that kind, in reinvestment in the railway property when the company had to extend its lines and put in new capital.

"The Sherman act was passed, and we have had a campaign of nineteen years, state and national, and we have got to this situation—that, as a matter of form, the enterprise of this country cannot consolidate legally or lawfully, either through a trustee or through a company known as a holding company; but, as a matter of fact, the tendency of consolidation is just as strong, the arguments in its favor are just as forceful, as they were then. We have had twenty years of a campaign against form and not against substance; the substance of things is as it was when that twenty years began, only it has been accentuated and intensified."

### Breaking Up Housekeeping.

One of the most reckless things done in this reckless country is to run a loaded street car on a railway crossing without the protection of adequate fixed signals to stop an express train if one should happen along just as the trolley car accidentally lost its power. We do it every day, however; and the commonness of the practice seems to spread the microbe of heedlessness. The following grotesque incident is taken from the *Chicago Record-Herald*:

Mr. and Mrs. Arnold Koszcioski, of Gary, Ind., have broken up housekeeping. It might be more correct to say their house was broken up for them. A man who was moving their domicile yesterday carelessly left it on a railway track about three minutes and while he went after a piece of chain a freight train came along and demolished it. The worst of it is the Koszcioskis are away on a visit. When they return all they will be able to collect of their former furnishings are a small section of blue border from a rag carpet and the handle with which Mrs. K. used to lift the griddles off the kitchen stove. It was at the Broadway crossing of the Michigan Central about 6 p.m. When a pulley chain broke Mr. Thornton started after another chain, but forgot to notify the agent that his house was on the track. A few minutes later a fast freight train, eastbound and heavily loaded, came along about 30 miles an hour and passed right through the Koszcioskis' sitting-room. Beds, tables, chairs, stoves, dishes, pillows, sheets and all the other appurtenances of a first-class household flew hither and thither through the air, until some of the superstitious inhabitants of the town thought a comet had hit Mars and the inhabitants of that planet were coming, with their belongings, to earth via the parachute route. The train wasn't even delayed. It ran about three blocks before the engineer could stop.

### Steel Officers' Car.

An all-steel car, to be used by the executive officers of the Pennsylvania, has just been turned out of the company's shops at Altoona. It is equipped with sitting room, servants' quarters and kitchen. The car is No. 120. It is 80 ft. 9¾ in. long. It has a sitting or work room, two staterooms, a kitchen, dining room for eight people, a stateroom for servants, and a kitchen with pantry, range, refrigerator and china closets. The first steel car was turned out of the Altoona shops in June, 1906.

### Pennsylvania Stockholders.

The average holding of Pennsylvania Railroad stockholders is 115 shares, the par value of which is $5,750. Of the total 55,270 stockholders, 26,904, or 48.62 per cent., are women. There are 16,812 stockholders living in Pennsylvania, the average individual holdings amounting to $4,800 stock. In New York there are 8,648 stockholders, and their average holdings are $11,800 stock. More than 12,000 holders live in New England, while 8,530 are scattered throughout the country. About 18 per cent. of the entire capital stock of the company is held abroad. On November 5 there were 8,726 stockholders in foreign countries, and their average holdings were $6,550 stock. The total number of stockholders of the Pennsylvania has increased by 9,841, or 21.6 per cent., in the past two years.

### The New Haven Road and the Post Office Department.

Press despatches say that the New York, New Haven & Hartford is to bring an action before the Court of Claims at Washington to recover $1,400,000 from the United States Government, this sum representing excess weight of mails carried by the road. Some time ago the company became dissatisfied with the weights of mail matter as computed on the basis of the government weighing and had its own employees weigh every sack. The Post Office Department then ordered that no railway employee be allowed to enter mail cars or to weigh the sacks. In order to bring the contest to a head the railway company will for a fixed period, without the consent of the Postmaster-General, which has been refused, weigh the mails delivered to it for transportation and if physically interfered with by the postal employees will apply for a writ of injunction against such interference. The road is now carrying the mails without a contract and merely as an accommodation to the public. It has refused to enter into the usual contract with the Post Office Department, but instead has attached to the "distance circulars," which are the legal pay vouchers, a formal printed protest against the methods of weighing under which it claims to be carrying the mails at a loss of at least $350,000 a year. The protest includes also a refusal to recognize the right of postal employees to ride free when working on postal cars. Their credentials are now being accepted only as proofs of identification and the company reserves the right to collect of the government the amount of their fares as a part of the suit that will be brought for reimbursement for mail carrying on a fair and equitable basis of weighing and compensation.

### New England Railroad Club.

The January meeting will take the form of a dinner at the Hotel Somerset, Boston, Mass., on January 12. The speakers will be Hon. E. S. Draper, governor of Massachusetts; W. C. Brown, president of the New York Central Lines, and Geo. A. Post, president of the Railway Business Association. The general subject of the evening will be the increasing, in New England, sentiments looking toward conciliation between the public and the railways. W. B. Leach, treasurer and general manager of the Hunt-Spiller Mfg. Corporation, Boston, a former president of the New England Railroad Club and now an executive member of the Railway Business Association, is chairman of the dinner committee.

### Buffalo Transportation Club.

At a meeting of the board of managers held last week the following were elected: President, John T. Mooney, general manager of the Buffalo, Genesee & Rochester Railroad; first vice-president, George C. Ransom, division freight agent, Michigan Central; second vice-president, George W. Smith, assistant traffic manager, South Buffalo Railway; secretary, J. M. Sells, ticket accountant, Northern Steamship Company; treasurer, C. J. Newcomer, freight and live stock agent, D., L. & W.

### Central Railway Club.

At the annual meeting to be held at the Hotel Iroquois, Buffalo, N. Y., W. O. Thompson, master car builder, Western division, New York Central & Hudson River, will give a paper entitled "Car Interchange: Its Past, Present and Future."

### Canadian Society of Civil Engineers.

At the regular meeting held on Thursday, December 16, at Montreal, A. D. Swan, resident engineer, Montreal Harbor Works, gave a paper descriptive of the construction of the New Harbor, Wet Dock and Graving Dock at Bristol, England.

### American Railway Association to be Represented at Berne Railway Congress.

At the eighth session of the International Railway Congress to be held at Berne, Switzerland, July 4-16 next, the American Railway Association will be represented by its president, general secretary and six other delegates to be named by the president.

### American Street and Interurban Railway and Manufacturing Association.

The mid-winter meeting will be held in New York on January 27 and 28, 1910. In the past these mid-winter sessions have been attended only by the executive committees and special committees, but the association has this year invited the president or other accredited representative of each of the member companies, and a large attendance of executive and financial heads of the street railway companies is expected. On January 28 there will be a dinner at the Hotel Knickerbocker. President Shaw, of the American Street and Interurban Railway Association, will attend.

## MEETINGS AND CONVENTIONS.

*The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.*

AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston Mass.; May 10-13; Indianapolis.
AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Scranton, Pa. June, 1910; Niagara Falls, Ont.
AMERICAN ASSOC. OF LOCAL FREIGHT AGENTS' ASSN'S.—G. W. Dennison, Penna. Co., Toledo, Ohio.
AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS.—R. W. Pope, 33 West 39th St., New York; second Friday in month; New York.
AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 24 Park Place, New York; May 18; New York.
AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—S. F. Patterson, B. & M., Concord, N. H.
AMERICAN RAILWAY ENGINEERING AND MAINT. OF WAY ASSOC.—E. H. Fritch, Monadnock Bldg., Chicago, March 14-17, 1910; Chicago.
AMERICAN RAILWAY INDUSTRIAL ASSOCIATION.—G. L. Stewart, St. L. S. W. Ry., St. Louis; second Tuesday, May; Memphis, Tenn.
AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, Old Colony Building, Chicago; June 20-22; Atlantic City.
AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. Edgar Marburg, Univ. of Pa., Philadelphia.
AMERICAN SOCIETY OF CIVIL ENGINEERS.—C. W. Hunt, 220 W. 57th St., N. Y.; 1st and 3d Wed., except July and August; New York.
AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., N. Y.; 2d Tues. in month; New York.
AMERICAN STREET AND INTERURBAN RAILWAY ASSOCIATION.—B. V. Swenson, 29 W. 39th St., New York.
ASSOCIATION OF AM. RY. ACCOUNTING OFFICERS.—C. G. Phillips, 143 Dearborn St., Chicago; June 29, 1910; Colorado Springs.
ASSOCIATION OF RAILWAY CLAIM AGENTS.—E. H. Hemus, A., T. & S. F., Topeka, Kan.; May; Nashville, Tenn.
ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, Wisconsin Central Ry., Chicago; May 16-20, 1910; Los Angeles.
ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 24 Park Place, N. Y.
CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 1st Tues. in month, except June, July and Aug.; Montreal.
CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, Montreal, Que.; irregular, usually weekly; Montreal.
CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Friday in January, March, May, Sept. and Nov.; Buffalo.
FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Rich., Fred. & Pot. R. R., Richmond, Va.; June 15, 1910; California.
INTERNATIONAL MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York.
INTERNATIONAL RAILWAY FUEL ASSOCIATION.—D. B. Sebastian, La Salle St. Station, Chicago; May; Chicago.
INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—L. H. Bryan, D. & I. R. Ry., Two Harbors, Minn.; May; Cincinnati.
IOWA RAILWAY CLUB.—W. B. Harrison, Union Station, Des Moines, Ia.; 2d Friday in month, except July and August; Des Moines.
MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Old Colony Bldg., Chicago; June 15-17; Atlantic City.
NEW ENGLAND RAILROAD CLUB.—G. H. Frazier, 10 Oliver St., Boston, Mass.; 2d Tues. in month, ex. June, July, Aug. and Sept.; Boston.
NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York.; 3d Friday in month, except June, July and August; New York.
NORTH-WEST RAILWAY CLUB.—T. W. Flanagan, Soo Line, Minn.; 1st Tues. after 2d Mon., ex. June, July, August; St. Paul and Minn.
RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, Pittsburgh, Pa.; 4th Friday in month, except June, July and August; Pittsburgh.
RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, 12 North Linden St., Bethlehem, Pa.
RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, Box C, Collinwood, Ohio; May 16-18; St. Louis.
ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—Walter E. Emery, P. & P. U. Ry., Peoria, Ill.
ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug.; St. Louis.
SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Norquist, Chicago.
SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—J. H. O'Donnell, Bogalusa, La.
SOUTHERN AND SOUTHWESTERN RY. CLUB.—A. J. Merrill, Prudential Bldg., Atlanta; 3d Thurs., Jan., April, Aug. and Nov.; Atlanta.
TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R. R. R., East Buffalo, N. Y.
WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, 199 Chestnut St., Winnipeg; 2d Monday, except June, July and August; Winnipeg.
WESTERN RAILWAY CLUB.—J. W. Taylor, Old Colony Bldg., Chicago; 3d Tuesday each month, except June, July and August; Chicago.
WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, Monadnock Bldg., Chicago; 1st Wednesday, except July and August; Chicago.

# Traffic News.

The Canadian Pacific through trains No. 1 and No. 2 will be withdrawn for the winter months between Montreal and Winnipeg, and between Calgary and Vancouver. Between Winnipeg and Calgary they will continue to run, making three through trains each way week days between these two cities.

The Illinois Railway Commission has set a hearing on various classification matters for January 5 at Chicago. A number of large shippers will attempt to get the commission to issue a rule requiring railways to notify shippers when consignees fail to call for or accept shipments. They claim that it often happens now that unclaimed shipments are sold for freight charges without the consignors' knowing that delivery was not accepted.

The citrus fruit growers of the Pacific coast have complained to the Interstate Commerce Commission of the rates on lemons in carloads from California to the East. About 500 railways are made defendants and a still larger number of fruit growers are among the plaintiffs. It is claimed that when the new tariff law increased by five mills a pound the duty on lemons imported from Italy the railways at once advanced their freight rates sufficiently to offset what the growers had expected to make by the increase of the import duties.

The western railways have withdrawn their notice that they will not make any special rates for merchants' excursions during 1910. This notice was served a few weeks ago and it is withdrawn because some of the roads have refused to abide by it. The action also affects reduced rates for meetings, conventions, state fairs, etc., and each individual line will take such action about these rates as it sees fit. Maximum rates for homeseekers have been determined upon. On the new basis the rates will be increased between $2.50 and $5. The colonist rate from Chicago to the Pacific coast will be $33; from St. Louis $27.50, and from Kansas City $25.

"Pennsylvania Railroad" is the sign which now appears over the window of a station ticket office in Brooklyn, N. Y. This ticket office is in the Flatbush avenue station of the Long Island Railroad. It is said that the posting of this sign looks forward to the time when cars will be run from that station to Manhattan through the new Pennsylvania tunnels, and thence on to Philadelphia and the West. However, the office is maintained at present the same as a "city ticket office" for the benefit of people in Brooklyn who go to the Pennsylvania station at Jersey City by way of the subway to Fulton street, Manhattan, and thence by the Hudson & Manhattan tunnel beneath the Hudson river.

Saunders Norvell, president of the Norvell-Shapleigh Hardware Company, of St. Louis, addressed the Traffic Club of St. Louis on December 16 on the subject, "Good Service." Mr. Norvell said that a healthier moral tone pervades the business world than formerly. Relations between shippers and railways have greatly improved, and patronage is no longer obtained or maintained by rebates, expensive presents and social entertainments. The traffic manager of to-day, he said, secures business on good service, and good service alone, and the old methods of influencing business by such demoralizing agencies as a liberal expense account for questionable entertaining purposes and drinking practices have been abolished for all time. The old way caused many good men of marked ability to sacrifice health and reputation and fall by the wayside. The new way elevates the man and enlarges his usefulness. The railways running into St. Louis, Mr. Norvell said, had within the past two years accomplished a great deal in the development of St. Louis commerce by improved freight and passenger service. He paid a compliment to Traffic Commissioner Coyle of the Business Men's League Freight Bureau, who had originated the daily package car service from St. Louis and had labored faithfully to develop it. At this time

## Revenues and Expenses of Express Companies in the United States.

FOR THE MONTH OF JULY, 1909.

| Name of company. | Adams Express. | American Express. | Canadian Express. | Can. Nor. Express. | Globe Express. | Great Nor. Express. | National Express. | Northern Express. | Pacific Express. | Southern Express. | United States Express. | Wells. Fargo & Co. | Western Express |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mileage of all lines covered: Rail lines | 30,890 | 46,042 | 7,078 | 3,164 | 1,900 | 7,171 | 1,030 | 6,497 | 22,064 | 31,013 | 23,891 | 61,240 | 3,452 |
| Other lines | 3,488 | 2,158 | 2,792 | 22 | ..... | 211 | 292 | 261 | 608 | 3,075 | 611 | 4,942 | 4 |
| Operating revenues: | | | | | | | | | | | | | |
| Express | $2,350,527 | $2,588,379 | $215,415 | $24,316 | $58,372 | $224,323 | $109,900 | $288,570 | $661,058 | $856,336 | $1,240,807 | $2,292,401 | $62,032 |
| Misc. transportation | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 48 | 155 |
| Nontransportation | 12,972 | 102,780 | 4,509 | 952 | 481 | 1,079 | 433 | 4,650 | 8,653 | 7,417 | 18,285 | 38,792 | 903 |
| T'l receipts, operation | 2,363,499 | 2,691,160 | 219,924 | 25,268 | 58,852 | 225,402 | 110,334 | 293,220 | 669,711 | 863,754 | 1,259,092 | 2,331,241 | 63,090 |
| Exprs. privileges—Dr. | 1,224,684 | 1,219,063 | 107,435 | 10,281 | 29,261 | 91,071 | 41,036 | 138,521 | 324,849 | 412,871 | 607,806 | 1,116,192 | 28,441 |
| Total | $1,138,816 | $1,472,097 | $112,489 | $14,987 | $29,591 | $134,331 | $69,298 | $154,699 | $344,862 | $450,883 | $651,286 | $1,215,048 | $34,649 |
| Operating expenses: | | | | | | | | | | | | | |
| Maintenance | $51,467 | $37,446 | $2,940 | $105 | $424 | $1,110 | $1,624 | $1,005 | $12,225 | $9,970 | $52,760 | $46,413 | $416 |
| Traffic | 4,267 | 18,631 | 1,343 | 100 | 911 | 1,077 | ..... | 803 | 6,119 | 5,286 | 8,063 | 13,662 | 1,148 |
| Transportation | 891,291 | 1,121,385 | 73,907 | 8,061 | 13,758 | 48,992 | 47,426 | 68,547 | 205,448 | 316,016 | 589,950 | 833,047 | 2,270 |
| General | 64,761 | 90,836 | 7,858 | 1,323 | 2,523 | 3,297 | 2,812 | 7,239 | 12,737 | 46,252 | 44,247 | 59,570 | 18,996 |
| Total | $1,011,786 | $1,268,297 | $86,048 | $9,588 | $17,616 | $54,475 | $51,862 | $77,595 | $236,530 | $377,522 | $695,020 | $952,691 | $22,830 |
| Net operatg rev., or def. | $127,030 | $203,800 | $26,441 | $5,399 | $11,976 | $79,856 | $17,436 | $77,105 | $108,332 | $73,360 | $43,734* | $262,357 | $11,818 |
| Taxes | $13,920 | 14,038 | 1,150 | 130 | 350 | 3,443 | 17 | 3,500 | 4,948 | 9,819 | 4,725 | 16,624 | 461 |
| Operating inc., or loss | $113,110 | $189,763 | $25,291 | $5,268 | $11,626 | $76,413 | $17,419 | $73,605 | $103,384 | $63,541 | $48,460† | $245,734 | $11,357 |

FOR THE MONTH OF AUGUST, 1909.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mileage of all lines covered: Rail lines | 30,604 | 46,054 | 7,078 | 3,164 | 1,900 | 7,172 | 1,030 | 6,497 | 22,070 | 31,013 | 23,891 | 61,721 | 3,452 |
| Other lines | 3,488 | 2,159 | 2,792 | 22 | ..... | 211 | 292 | 261 | 608 | 2,995 | 611 | 4,910 | 4 |
| Operating revenues: | | | | | | | | | | | | | |
| Express | $2,276,661 | $2,524,980 | $204,842 | $26,690 | $63,085 | $221,302 | $111,709 | $308,128 | $641,675 | $768,443 | $1,232,773 | $2,237,025 | $65,112 |
| Misc. transportation | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 208 | 198 |
| Nontransportation | 11,986 | 119,777 | 3,900 | 906 | 468 | 1,026 | 357 | 4,548 | 8,325 | 9,825 | 19,308 | 35,124 | 860 |
| T'l receipts, operation | 2,288,648 | 2,644,758 | 208,743 | 27,597 | 63,553 | 222,328 | 112,067 | 312,676 | 650,000 | 778,268 | 1,252,081 | 2,272,356 | 66,170 |
| Exprs. privileges—Dr. | 1,176,367 | 1,188,074 | 104,017 | 10,189 | 31,491 | 89,518 | 46,005 | 150,726 | 315,694 | 368,473 | 584,304 | 1,085,665 | 28,608 |
| Total | $1,112,280 | $1,456,684 | $104,725 | $17,407 | $32,062 | $132,810 | $66,062 | $161,950 | $334,307 | $409,795 | $667,777 | $1,186,691 | $37,563 |
| Operating expenses: | | | | | | | | | | | | | |
| Maintenance | $69,125 | $39,597 | $1,077 | $57 | $810 | $683 | $1,108 | $1,893 | $15,673 | $10,304 | $43,858 | $66,104 | $292 |
| Traffic | 4,406 | 19,162 | 934 | 135 | 888 | 785 | ..... | 2,871 | 6,208 | 4,670 | 9,218 | 13,880 | 2,318 |
| Transportation | 879,837 | 1,112,863 | 71,978 | 8,475 | 14,269 | 49,430 | 46,809 | 66,025 | 205,764 | 315,419 | 598,855 | 823,563 | 19,768 |
| General | 70,261 | 98,295 | 7,241 | 1,288 | 2,546 | 3,015 | 2,932 | 4,356 | 12,731 | 44,168 | 43,201 | 63,146 | 2,193 |
| Total | $1,023,629 | $1,269,918 | $81,229 | $9,954 | $18,513 | $53,913 | $50,849 | $75,145 | $240,375 | $374,560 | $695,132 | $966,693 | $24,570 |
| Net operatg rev., or def. | $88,651 | $186,766 | $23,496 | $7,453 | $13,549 | $78,897 | $15,213 | $86,805 | $93,932 | $35,235 | $27,355* | $219,998 | $12,992 |
| Taxes | 15,546 | 33,936 | 1,150 | 130 | 550 | 3,450 | 2,459 | 3,500 | 4,948 | 9,991 | 5,756 | 16,606 | 461 |
| Operating inc., or loss | $73,105 | $152,830 | $22,346 | $7,323 | $12,999 | $75,447 | $12,754 | $83,305 | $88,984 | $25,245 | $33,110† | $203,392 | $12,531 |

*Deficit. †Loss.

not less than 1,000 package cars are run from St. Louis daily with merchandise destined to various break-bulk points. Mr. Norvell contended that the greatest menace to the large jobbing interests of the country to-day is the small jobbing center and that the only way to meet that competition is by prompt and regular package car service, of which St. Louis now enjoys a liberal share to all points in the Southwest and the Southeast. The results are apparent to all commercial houses here and the good work is still going on.

W. S. McChesney, president and general manager of the Terminal Railroad Association of St. Louis, has issued a statement in which he says that this company cannot afford to abolish the bridge and terminal charges on freight and passenger business originating within a radius of 100 miles of St. Louis. On business originating more than 100 miles from St. Louis the bridge and terminal charges are absorbed by the trunk lines. The city council has refused to cause the vacation of streets and alleys in the so-called Rankin tract to enable the company to enlarge its facilities there, unless the company in return will abolish the arbitrary on passenger traffic. The plans of the Terminal for the enlargement of its facilities were described in the *Railroad Age Gazette* of September 10 last, page 459. In his statement Mr. McChesney says: The suggestion has been made that the Terminal Railroad Association waive its 20 cents per ton on coal and make St. Louis deliveries on a mileage basis. Such a move would destroy St. Louis as a manufacturing center. Under the laws of both Missouri and Illinois the roads are entitled to a charge for comparative distances of at least 2 cents per ton-mile for hauling coal. We would first have to cut the city into zones or districts, say about five miles apart. The rate would be 10 cents per ton for each zone of five miles or fraction thereof. This would give men located at Sixteenth street a rate of 10 cents per ton, plus the rate from the mines to East St. Louis. The man at Compton avenue, being within the 10-mile zone, would have to pay 20 cents, plus the East St. Louis rate. Other delivery points would be within the 15-mile zone, which would mean a rate of 30 cents, plus the Illinois rate. Let me ask, in all candor, how long would St. Louis enjoy prosperity as an industrial center under such conditions? As it is now, the rate from the mines to St. Louis is 52 cents per ton, and the manufacturers in Carondelet and Baden have the same rate that is given the industries at Twelfth street.

## Car Surpluses and Shortages.

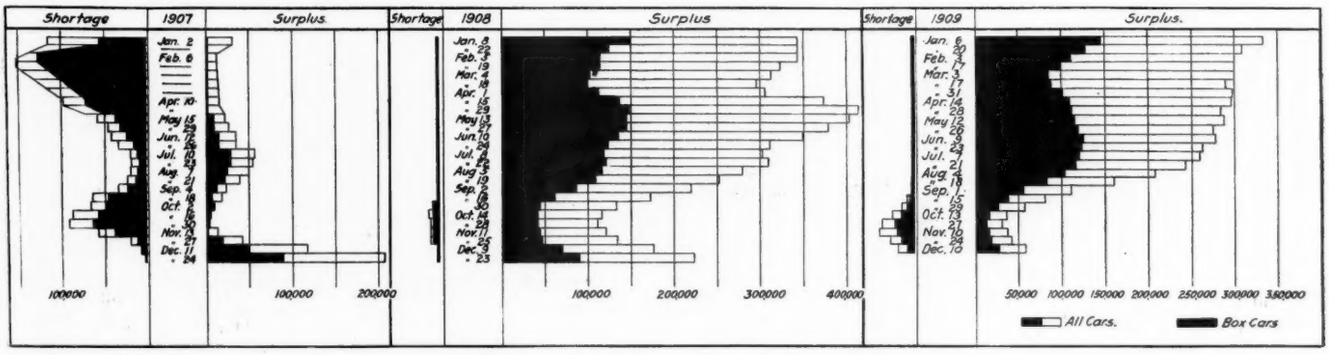
Arthur Hale, chairman of the committee on relations between railways of the American Railway Association, presenting statistical bulletin No. 61 giving a summary of car shortages and surpluses by groups from July 22, 1908, to December 10, 1909, says:

"There is a further increase in the surplus and a decrease in the shortage, the surplus totalling 57,470 with 18,593 shortage. The principal change is in box cars, the coal car situation not showing quite such a falling off. All groups show an increase in the surplus, the heaviest increase being in group 6 (Northwestern). There are decreases in shortage in all groups excepting 4 (North Atlantic), where a slight increase in coal car shortage caused an increase in the total shortage figures."

The accompanying table gives the surpluses and shortages for the period covered by the report, and the diagram shows surpluses and shortages in 1907, 1908 and 1909.

CAR SURPLUSES AND SHORTAGES, JULY 22, 1908, TO DECEMBER 10, 1909, INCLUSIVE.

| | | Surpluses. | | | | | Shortages | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number of roads. | Box. | Flat. | Coal, gondola and hopper. | Other kinds. | Total. | Box. | Flat. | Coal, gondola and hopper. | Other kinds. | Total. |
| December 10, 1909 | 176 | 26,989 | 6,488 | 6,848 | 17,145 | 57,470 | 7,713 | 757 | 5,927 | 4,196 | 18,593 |
| November 24, 1909 | 163 | 17,538 | 4,091 | 5,628 | 12,271 | 39,528 | 12,230 | 891 | 9,542 | 4,833 | 27,496 |
| October 27, 1909 | 174 | 13,029 | 3,090 | 5,287 | 9,490 | 30,896 | 23,138 | 1,412 | 8,743 | 3,343 | 36,636 |
| September 20, 1909 | 174 | 22,330 | 3,821 | 11,239 | 15,998 | 53,388 | 8,184 | 655 | 4,392 | 1,351 | 14,582 |
| August 18, 1909 | 169 | 82,505 | 5,953 | 42,158 | 28,808 | 159,424 | 556 | 277 | 1,076 | 100 | 2,009 |
| July 21, 1909 | 165 | 116,221 | 9,971 | 78,675 | 38,487 | 243,354 | 106 | 169 | 31 | 33 | 339 |
| June 23, 1909 | 166 | 121,441 | 12,099 | 89,292 | 40,112 | 262,944 | 211 | 190 | 193 | 233 | 827 |
| May 26, 1909 | 158 | 118,077 | 14,940 | 97,006 | 43,687 | 273,710 | 83 | 99 | 1,011 | 47 | 1,240 |
| April 28, 1909 | 161 | 107,665 | 16,487 | 110,538 | 47,638 | 282,328 | 144 | 106 | 74 | 173 | 497 |
| March 31, 1909 | 158 | 101,344 | 20,428 | 128,546 | 46,282 | 296,600 | 158 | 98 | 116 | 27 | 399 |
| February 17, 1909 | 159 | 98,512 | 23,924 | 135,208 | 43,797 | 301,441 | 266 | 97 | 11 | 96 | 470 |
| January 20, 1909 | 162 | 127,204 | 26,723 | 116,680 | 41,057 | 311,664 | 163 | 21 | 139 | 35 | 358 |
| December 23, 1908 | 158 | 87,350 | 16,247 | 79,595 | 38,885 | 222,077 | 471 | 42 | 289 | 217 | 1,019 |
| November 25, 1908 | 160 | 45,194 | 12,157 | 43,854 | 31,624 | 132,829 | 7,923 | 178 | 900 | 209 | 9,210 |
| October 28, 1908 | 158 | 39,383 | 10,185 | 31,541 | 29,803 | 110,912 | 8,175 | 167 | 2,261 | 236 | 10,839 |
| September 30, 1908 | 160 | 42,593 | 10,365 | 49,795 | 31,039 | 133,792 | 7,313 | 450 | 224 | 127 | 8,114 |
| August 19, 1908 | 160 | 106,367 | 13,494 | 92,500 | 40,642 | 253,003 | 465 | 90 | 105 | 194 | 854 |
| July 22, 1908 | 166 | 120,580 | 14,401 | 125,739 | 47,960 | 308,680 | 115 | 37 | 330 | 27 | 509 |




Car Surpluses and Shortages in 1907, 1908 and 1909.

## Where Are the Increases?

The Pullman Company has voluntarily submitted to the Kansas Railway Commission a reduced tariff of berth and chair rates in Kansas. The proposed schedule shows 175 rates formerly $2, reduced to $1.50; 26 rates formerly $2.50, reduced to $2; 24 rates formerly $3, reduced to $2.50; eight rates formerly $3.50, reduced to $3; three rates formerly $3.50, reduced to $2.50; two rates formerly $4, reduced to $3.50; 1,254 seat rates are shown in the tariff of which 820 were decreased; 154 seat rates were decreased 5 cents, 206 were decreased 10 cents; 164 decreased 15 cents; 111 decreased 20 cents; 112 decreased 25 cents; 49 decreased 30 cents; 16 decreased 35 cents, and eight decreased 40 cents.

## REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF OCTOBER, 1909.
(See also issues of Dec. 10 and 17.)

| Name of road. | Mileage operated at end of period. | Operating revenues | | | Operating expenses | | | | | | Net operating revenues (or deficit). | Outside operations. net. | Taxes. | Operating income (or loss). | Increase (or dec.) comp. with last year. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Maintenance | | | | | | | | | | |
| | | Freight. | Passenger. | Total, inc. misc. | Way and structures. | Of equipment. | Traffic. | Transportation. | General. | Total. | | | | | |
| Alabama Great Southern | 309 | $257,097 | $85,608 | $370,629 | $56,528 | $73,370 | $9,138 | $103,472 | $9,769 | $252,277 | $118,352 | —$466 | $11,236 | $106,650 | $26,003 |
| Ann Arbor | 301 | 115,783 | 39,420 | 167,828 | 24,978 | 21,898 | 4,368 | 54,356 | 4,318 | 109,918 | 57,910 | 2,253 | 12,331 | 47,833 | —2,770 |
| Bessemer & Lake Erie | 201 | 821,292 | 22,994 | 852,337 | 68,224 | 111,680 | 5,838 | 194,382 | 6,769 | 386,893 | 465,444 | ..... | 5,000 | 460,444 | 62,626 |
| Buffalo & Susquehanna | 361 | 195,897 | 18,718 | 220,732 | 36,890 | 48,388 | 2,702 | 84,039 | 7,891 | 179,910 | 40,822 | —99 | 4,000 | 36,723 | —16,732 |
| Central Vermont | 411 | 230,562 | 98,808 | 352,353 | 53,988 | 69,695 | 7,167 | 126,152 | 7,550 | 264,552 | 87,801 | 983 | 11,117 | 77,668 | 21,977 |
| Chicago & Alton | 998 | 792,809 | 419,779 | 1,303,341 | 151,718 | 138,330 | 40,272 | 385,187 | 29,327 | 744,834 | 558,507 | 261 | 32,000 | 526,768 | 27,678 |
| Chicago & Eastern Illinois | 965 | 881,244 | 155,946 | 1,085,712 | 88,407 | 221,072 | 25,808 | 317,848 | 31,821 | 684,956 | 400,756 | —1,551 | 32,400 | 366,805 | 136,380 |
| Chicago & Erie | 269 | 353,354 | 74,295 | 461,304 | 60,715 | 83,466 | 15,062 | 180,956 | 9,897 | 350,096 | 111,208 | ..... | 10,939 | 100,269 | 36,786 |
| Chicago, Indiana & Southern | 341 | 294,219 | 23,603 | 324,804 | 56,081 | 52,555 | 8,693 | 103,749 | 7,917 | 228,995 | 95,809 | 200 | 12,500 | 83,509 | 55,044 |
| Chicago, Rock Island & Gulf | 529 | 207,927 | 66,574 | 287,838 | 41,285 | 19,258 | 6,208 | 98,082 | 8,883 | 173,716 | 114,122 | —250 | 4,550 | 109,322 | 50,258 |
| Cincinnati, New Orleans & Texas Pac. | 337 | 633,355 | 128,845 | 799,455 | 105,828 | 138,727 | 18,857 | 217,186 | 18,356 | 498,954 | 300,501 | —543 | 20,000 | 279,958 | 93,127 |
| Colorado Midland | 337 | 180,110 | 32,304 | 243,962 | 30,142 | 32,806 | 10,238 | 97,491 | 5,648 | 176,325 | 67,637 | —858 | 9,350 | 57,429 | 18,970 |
| Detroit, Toledo & Ironton | 441 | 126,961 | 14,591 | 152,939 | 32,276 | 29,315 | 2,541 | 64,482 | 4,189 | 132,803 | 20,136 | ..... | 6,510 | 13,626 | —12,318 |
| Duluth & Iron Range | 168 | 1,248,980 | 21,630 | 1,280,069 | 111,078 | 75,290 | 285 | 191,818 | 9,291 | 387,762 | 892,307 | 1,474 | 51,345 | 842,436 | 130,197 |
| Duluth, South Shore & Atlantic | 594 | 210,032 | 83,999 | 308,233 | 39,851 | 28,971 | 11,398 | 114,342 | 5,938 | 200,500 | 107,733 | 942 | 16,000 | 92,675 | 26,178 |
| Florida East Coast | 583 | 102,979 | 58,954 | 189,573 | 31,665 | 34,688 | 3,739 | 74,597 | 6,924 | 151,613 | 37,960 | ..... | 11,544 | 26,416 | 34,443 |
| Fort Worth & Denver City | 454 | 353,209 | 154,252 | 526,347 | 54,779 | 66,481 | 5,469 | 149,147 | 16,169 | 292,045 | 234,302 | 330 | 9,300 | 225,332 | 62,013 |
| Grand Trunk Western | 336 | 364,020 | 151,364 | 548,263 | 92,466 | 78,340 | 19,741 | 190,872 | 10,674 | 392,093 | 156,170 | —1,070 | 29,190 | 125,910 | —19,654 |
| Hocking Valley | 350 | 652,139 | 80,503 | 754,860 | 111,324 | 110,395 | 7,949 | 186,919 | 14,572 | 431,159 | 323,701 | 17,753 | 22,548 | 318,906 | 103,666 |
| Iowa Central | 558 | 265,027 | 50,145 | 327,562 | 46,917 | 43,208 | 8,348 | 114,456 | 8,976 | 221,904 | 105,658 | ..... | 7,412 | 98,246 | 52,880 |
| Kanawha & Michigan | 175 | 220,478 | 30,420 | 255,536 | 45,577 | 52,098 | 2,340 | 61,301 | 3,949 | 165,265 | 90,271 | —11 | 7,012 | 83,248 | 20,604 |
| Minneapolis & St. Louis | 1,027 | 380,447 | 153,365 | 566,024 | 79,598 | 43,265 | 11,342 | 196,162 | 14,216 | 344,583 | 221,441 | —176 | 22,685 | 198,580 | 27,580 |
| Morgan's La. & Tex. R. R. & S. S. Co. | 358 | 310,239 | 106,620 | 443,489 | 55,600 | 43,020 | 10,136 | 142,342 | 12,391 | 263,489 | 180,000 | —2,542 | 16,000 | 161,458 | 78,778 |
| Norfolk & Southern | 592 | 153,010 | 58,799 | 229,267 | 28,367 | 24,974 | 3,550 | 69,933 | 13,111 | 139,935 | 89,332 | —210 | 5,900 | 83,222 | 27,817 |
| Northwestern Pacific | 375 | 141,811 | 135,232 | 300,467 | 48,887 | 35,819 | 2,505 | 98,214 | 9,339 | 194,764 | 105,703 | ..... | 10,581 | 95,122 | 24,789 |
| Peoria & Eastern | 351 | 211,302 | 64,448 | 294,366 | 31,152 | 43,207 | 4,963 | 98,745 | 4,288 | 182,355 | 112,011 | ..... | 8,800 | 103,211 | 39,667 |
| Pittsburgh & Lake Erie | 191 | 1,432,084 | 128,802 | 1,601,088 | 143,099 | 56,277 | 13,957 | 306,010 | 19,765 | 539,108 | 1,061,980 | —606 | 16,000 | 1,045,374 | 396,619 |
| Rutland | 468 | 194,317 | 97,949 | 321,384 | 59,329 | 52,007 | 6,377 | 99,934 | 5,376 | 223,023 | 98,361 | ..... | 10,326 | 88,035 | 25,486 |
| St. Louis & San Francisco | 4,726 | 2,447,595 | 921,432 | 3,621,295 | 610,219 | 539,683 | 78,846 | 1,181,187 | 87,813 | 2,497,748 | 1,123,547 | ..... | 117,610 | 1,005,937 | 138,558 |
| St. Louis, Brownsville & Mexico | 456 | 84,188 | 36,915 | 128,430 | 25,732 | 16,395 | 2,496 | 40,325 | 7,073 | 92,021 | 36,409 | ..... | 3,600 | 32,809 | 18,827 |
| Seaboard Air Line | 2,603 | 1,178,006 | 307,097 | 1,630,651 | 219,341 | 219,060 | 56,734 | 474,735 | 48,495 | 1,018,365 | 612,286 | —2,018 | 53,000 | 557,268 | 189,167 |
| Toledo & Ohio Central | 441 | 300,056 | 49,774 | 365,588 | 52,295 | 59,417 | 5,440 | 112,279 | 4,653 | 234,084 | 131,504 | 15,612 | 13,556 | 133,560 | —53,632 |
| Toledo, St. Louis & Western | 451 | 279,640 | 40,694 | 340,720 | 42,602 | 46,128 | 6,206 | 105,512 | 8,581 | 209,029 | 131,691 | ..... | 12,000 | 119,691 | 25,982 |
| Trinity & Brazos Valley | 455 | 221,444 | 21,008 | 245,947 | 33,221 | 33,618 | 4,964 | 98,425 | 9,341 | 179,569 | 66,378 | ..... | 4,759 | 61,628 | —4,286 |
| West Jersey & Seashore | 356 | 152,790 | 217,916 | 404,827 | 84,706 | 64,218 | 17,763 | 185,310 | 8,089 | 360,086 | 44,741 | 4,253 | 20,037 | 28,957 | 4,297 |
| Western Maryland | 543 | 503,554 | 79,648 | 607,696 | 87,178 | 81,208 | 8,276 | 178,840 | 13,616 | 369,118 | 238,578 | ..... | 17,500 | 221,078 | 29,433 |
| FOUR MONTHS OF FISCAL YEAR 1910. | | | | | | | | | | | | | | | |
| Alabama Great Southern | 309 | 814,502 | 362,798 | 1,285,003 | 147,163 | 336,832 | 35,112 | 369,241 | 36,373 | 924,721 | 360,283 | —1,755 | 44,944 | 313,583 | 15,223 |
| Ann Arbor | 301 | 376,042 | 194,156 | 615,984 | 97,491 | 64,892 | 18,123 | 205,624 | 17,069 | 403,199 | 212,785 | 16,592 | 49,322 | 180,054 | 17,371 |
| Bessemer & Lake Erie | 201 | 3,360,563 | 146,816 | 3,537,609 | 266,204 | 452,724 | 28,509 | 743,435 | 26,706 | 1,517,578 | 2,020,031 | ..... | 20,000 | 2,000,031 | 552,484 |
| Buffalo & Susquehanna | 361 | 764,957 | 93,928 | 884,405 | 153,059 | 201,536 | 8,676 | 302,528 | 30,933 | 696,732 | 187,674 | —89 | 16,000 | 171,584 | 10,160 |
| Central Vermont | 411 | 817,528 | 464,770 | 1,370,465 | 184,559 | 190,877 | 33,478 | 505,968 | 26,848 | 941,730 | 428,735 | 5,040 | 40,467 | 393,308 | 144,841 |
| Chicago & Alton | 998 | 2,939,649 | 1,592,237 | 4,894,670 | 576,334 | 476,623 | 162,112 | 1,433,061 | 115,278 | 2,763,408 | 2,131,262 | —1,132 | 128,000 | 2,002,130 | —26,606 |
| Chicago & Eastern Illinois | 965 | 3,036,017 | 661,489 | 3,899,589 | 356,889 | 670,941 | 91,344 | 1,209,794 | 127,689 | 2,456,657 | 1,442,932 | —4,940 | 129,600 | 1,308,392 | 393,786 |
| Chicago & Erie | 269 | 1,232,949 | 297,740 | 1,661,913 | 240,456 | 349,422 | 61,114 | 657,615 | 36,145 | 1,344,752 | 317,161 | ..... | 43,754 | 273,407 | 85,021 |
| Chicago, Indiana & Southern | 341 | 1,014,167 | 103,894 | 1,144,442 | 218,923 | 197,705 | 36,337 | 371,285 | 31,517 | 855,767 | 288,675 | 823 | 50,000 | 239,498 | 122,901 |
| Chicago, Rock Island & Gulf | 529 | 728,549 | 261,016 | 1,042,028 | 159,837 | 71,310 | 23,979 | 360,266 | 35,070 | 650,462 | 391,566 | —1,022 | 23,334 | 367,210 | 207,061 |
| Cincinnati, New Orleans & Texas Pac. | 337 | 2,222,444 | 524,504 | 2,887,011 | 323,189 | 571,684 | 74,756 | 799,032 | 70,874 | 1,839,535 | 1,047,476 | 49 | 80,000 | 967,525 | 217,236 |
| Colorado Midland | 337 | 588,943 | 171,632 | 867,475 | 123,149 | 134,761 | 40,331 | 349,357 | 21,988 | 669,586 | 197,889 | 528 | 37,400 | 161,017 | —14,643 |
| Detroit, Toledo & Ironton | 441 | 456,511 | 63,660 | 559,573 | 112,273 | 78,264 | 12,360 | 240,079 | 16,550 | 459,526 | 100,047 | —127 | 26,041 | 73,879 | —8,714 |
| Duluth & Iron Range | 168 | 5,368,805 | 81,056 | 5,484,404 | 405,945 | 259,312 | 1,249 | 736,611 | 34,766 | 1,437,883 | 4,046,521 | 25,327 | 219,775 | 3,852,073 | 1,132,308 |
| Duluth, South Shore & Atlantic | 594 | 776,166 | 377,651 | 1,212,410 | 199,208 | 111,704 | 37,852 | 414,952 | 28,078 | 791,794 | 420,616 | 6,142 | 64,000 | 362,758 | 140,680 |
| Florida East Coast | 583 | 343,846 | 231,904 | 674,791 | 127,824 | 141,588 | 14,248 | 299,404 | 28,645 | 611,709 | 63,082 | ..... | 46,178 | 16,904 | 173,082 |
| Fort Worth & Denver City | 454 | 1,101,826 | 671,196 | 1,850,373 | 206,386 | 234,560 | 28,794 | 508,516 | 56,176 | 1,034,432 | 815,941 | 1,703 | 37,200 | 780,444 | 163,388 |
| Grand Trunk Western | 336 | 1,234,281 | 717,898 | 2,081,613 | 268,492 | 289,550 | 96,403 | 695,496 | 53,208 | 1,403,149 | 678,464 | —663 | 116,760 | 561,041 | 9,889 |
| Hocking Valley | 350 | 2,237,719 | 344,780 | 2,663,082 | 358,020 | 466,371 | 30,611 | 660,905 | 49,683 | 1,565,590 | 1,097,492 | 77,436 | 86,631 | 1,088,297 | 179,101 |
| Iowa Central | 558 | 901,539 | 215,640 | 1,168,100 | 167,141 | 176,228 | 37,381 | 434,503 | 35,856 | 851,109 | 316,991 | ..... | 29,636 | 287,355 | 23,433 |
| Kanawha & Michigan | 175 | 801,262 | 118,727 | 937,125 | 178,804 | 185,644 | 9,011 | 221,642 | 15,861 | 610,962 | 326,163 | —86 | 27,683 | 298,394 | 73,345 |
| Minneapolis & St. Louis | 1,027 | 1,188,012 | 525,834 | 1,826,609 | 196,838 | 171,908 | 54,251 | 614,064 | 50,606 | 1,087,667 | 738,942 | —599 | 80,238 | 658,105 | 93,864 |
| Morgan's La. & Tex. R. R. & S. S. Co. | 358 | 994,559 | 369,909 | 1,449,193 | 205,457 | 203,619 | 39,317 | 516,060 | 50,478 | 1,014,931 | 434,262 | —3,315 | 64,000 | 366,947 | 115,527 |
| Norfolk & Southern | 592 | 529,061 | 260,078 | 862,939 | 105,688 | 103,465 | 17,869 | 260,961 | 54,455 | 542,438 | 320,501 | 2,668 | 23,600 | 299,569 | 124,316 |
| Northwestern Pacific | 375 | 521,996 | 683,065 | 1,292,837 | 207,980 | 135,491 | 10,643 | 394,751 | 37,804 | 786,669 | 506,168 | ..... | 42,324 | 463,844 | 65,282 |
| Peoria & Eastern | 351 | 785,589 | 263,851 | 1,126,349 | 129,867 | 164,457 | 21,690 | 375,226 | 20,424 | 711,665 | 414,684 | ..... | 35,200 | 379,484 | 100,888 |
| Pittsburgh & Lake Erie | 191 | 5,362,356 | 543,730 | 6,053,791 | 555,771 | 430,930 | 57,996 | 1,143,709 | 80,723 | 2,269,129 | 3,784,662 | —1,240 | 67,000 | 3,716,422 | 1,341,415 |
| Rutland | 468 | 617,023 | 471,153 | 1,203,761 | 194,191 | 150,711 | 26,407 | 375,634 | 21,191 | 768,134 | 435,627 | ..... | 40,083 | 395,544 | 72,199 |
| St. Louis & San Francisco | 4,726 | 8,975,523 | 3,709,956 | 13,661,340 | 2,198,972 | 2,114,112 | 298,672 | 4,352 288 | 349,075 | 9,313,119 | 4,348,221 | ..... | 442,120 | 3,906,101 | 600,787 |
| St. Louis, Brownsville & Mexico | 456 | 258,494 | 139,528 | 426,809 | 113,215 | 42,286 | 10,032 | 153,397 | 24,726 | 343,656 | 83,153 | ..... | 14,400 | 68,753 | —794 |
| Seaboard Air Line | 2,603 | 3,874,925 | 1,215,506 | 5,620,314 | 814,416 | 787,105 | 212,850 | 1,750,370 | 199,204 | 3,763,945 | 1,856,369 | —7,333 | 212,000 | 1,637,036 | 559,450 |
| Toledo & Ohio Central | 441 | 1,175,469 | 249,603 | 1,487,103 | 212,574 | 233,349 | 23,047 | 433,439 | 23,909 | 926,318 | 560,785 | 43,332 | 54,471 | 549,646 | —205,441 |
| Toledo, St. Louis & Western | 451 | 1,047,864 | 178,601 | 1,305,078 | 157,689 | 190,084 | 26,185 | 395,750 | 32,199 | 801,907 | 503,171 | ..... | 48,000 | 455,171 | 59,193 |
| Trinity & Brazos Valley | 455 | 574,808 | 74,714 | 662,922 | 122,103 | 132,238 | 19,997 | 304,784 | 38,623 | 617,746 | 45,176 | ..... | 16,500 | 28,676 | 29,644 |
| West Jersey & Seashore | 356 | 592,240 | 1,752,713 | 2,500,315 | 321,565 | 240,911 | 69,318 | 825,176 | 34,061 | 1,491,031 | 1,009,284 | 13,189 | 80,148 | 942,325 | 123,831 |
| Western Maryland | 543 | 1,854,313 | 385,369 | 2,340,744 | 320,490 | 308,530 | 41,455 | 666,189 | 51,646 | 1,388,310 | 952,434 | ..... | 70,000 | 882,434 | 91,159 |

—Indicates deficits, losses and decreases.

## INTERSTATE COMMERCE COMMISSION.

Again the commission holds that a rate is not unreasonable simply because a lower rate is in effect via lines of other railways. (17 I. C. C., 286.)

Rates on Malaga grapes in barrels from seaboard points to Pittsburgh, Pa., are found on investigation of the commission to be not unreasonable. (17 I. C. C., 283.)

The commission has given notice to railways that its orders must be obeyed as written. The notice is due to the failure of carriers to obey promptly and the commission says that in the future failure to comply with orders will be treated as intentional violations thereof and all carriers legally liable will be prosecuted for the penalties prescribed by law.

Shipper in following routing instruction in the tariff sent five carloads of lumber via a route over which there was no rate applicable except the class rate. The tariff being in error, the carriers' duty was to treat the shipments as though unrouted and to forward them via the junction making the lowest combination of rates. Reparation awarded. (17 I. C. C., 290.)

### Increased Rates from Buffalo Reasonable.

*Lautz Brothers & Co., Inc., v. Lehigh Valley et al. Opinion by Commissioner Clark.*

Class rates from Buffalo, N. Y., to certain points on the line of the Delaware & Hudson north of Whitehall, N. Y., were increased for the purpose of removing a discrimination which existed in favor of Buffalo as compared with points east thereof. Complaint alleges that to increase the rates was unreasonable. The rates are not complained of as unreasonable *per se*. These rates are blanketed over a considerable territory of origin and again over a considerable territory of distribution, and disruption of such grouping would be unwarranted. Complaint dismissed. (17 I. C. C. 167.)

### When a Railway Ceases to be a Carrier.

*Males Co. v. Lehigh & Hudson River et al. Opinion by Commissioner Clark.*

Complainant bought a locomotive from the Lehigh Valley Railroad under a contract of sale which provided that locomotive should be delivered by vendor at Easton, Pa., free of transportation charges. Delivery was made at Easton to the Lehigh & Hudson River accompanied by a card bill showing consignment to Lake View, N. J., and specific routing. The rate charged is alleged to be unreasonable and reparation is claimed. At the time of sale this locomotive was at South Easton, a station on the Lehigh Valley one mile south of Easton. A through joint rate of 10 cents per 100 lbs. was in effect from South Easton to Lake View via Easton, Sparta Junction and Hawthorne. No through joint rate was in effect from Easton via this route, the rate from Easton being made up of the combination of 10 cents to Hawthorne and 3 cents from Hawthorne to Lake View. There is a through joint rate of 10 cents from Easton to Lake View via Sparta Junction and Greycourt over the lines of the Lehigh & Hudson and the Erie. The Lehigh Valley did not participate in any transportation charges on this shipment, and in tendering it to the Lehigh & Hudson at Easton the Lehigh Valley acted as agent for the purchaser and not as a carrier. Shipment was therefore not misrouted by a carrier. Complaint dismissed. (17 I. C. C., 280.)

### Street Railway an Interstate Carrier.

*West End Improvement Club v. Omaha & Council Bluffs Railway & Bridge Co. et al. Opinion by Commissioner Clark.*

Complaint alleges that the 10-cent fare from Council Bluffs, Iowa, to Omaha, Neb., is unreasonable and that it is unjustly discriminatory, because defendants give longer rides for 5 cents on lines which do not cross the bridge. Defendants allege that they are street railways and not amenable to the terms of the act to regulate commerce, and that to reduce the fares as prayed for would result in a net loss from the operation of the properties. Defendants are held to be common carriers, engaged in the interstate transportation of persons, and therefore amenable to the terms and jurisdiction of the act; but the record does not disclose justification for making the reduction prayed for. It is unreasonable to charge more than 10 cents for a trip between any point on defendant's lines in Council Bluffs and any point on defendant's lines in Omaha. (17 I. C. C., 239.)

## STATE COMMISSIONS.

C. L. De Fuentes, chairman of the railway commission of Louisiana, is to resign January 1.

John S. Dawson, attorney for the Kansas Railway Commission, has written to the Missouri Pacific that the financial programme of the road, which involves consolidation of its subsidiaries, has the approval of the Kansas commission. He believes that the programme for 1909, when carried out, will make the M. P. as good and profitable as the Union Pacific and the Santa Fe.

The State Railroad Commission of Pennsylvania, as the result of a circular sent out several months ago, has gathered a large amount of information concerning the inspection of locomotive boilers, and it has appointed Professor P. B. de Schweinitz, of Lehigh University, to digest the reports. The commission expects to ask for the passage of additional laws on the subject of boiler inspection, if the examination of these reports justifies such an application.

The Railway Commission of Texas has called on the railways in that state to furnish accommodations for colored passengers equal to those furnished to white passengers. It is stated that the commission has received a complaint about the facilities afforded to colored passengers, which states that the "Jim Crow" coaches are seldom through cars, though it costs as much to ride in them as in the through cars for whites. It is alleged that compartments for colored people are often uncomfortable, cold and not provided with water; that lavatories are not supplied with soap and water; that no reclining chairs are ever provided and that it is very difficult for colored passengers to get anything to eat en route.

In its annual report, which has just been filed with Governor Harmon, the Ohio Railway Commission severely criticizes the financial management of some of the roads in that state. It says that with honest management there would not be a bankrupt railway in Ohio, and because some of the roads are overloaded with watered stock the public cannot get good service from them. It charges railway officers with "legerdemain of manipulation so that they may make a fortune in a day in utter disregard of the rights of the public." It states that in 1908 there were 90,410 employees who were paid in wages $64,127,757, while in 1909 a total of 97,507 employees received only $61,112,641. Passenger revenues of the Ohio steam lines were $30,508,000, a decrease of over $532,000, and the number of passengers carried was 37,385,000, a decrease of 237,000. No doubt this reduction is due to the competition of electric roads. Freight tonnage carried was 184,222,000 tons, an increase of 8,705,000 tons.

The New York Public Service Commission, Second district, has ordered the Lehigh Valley to establish a winter schedule on the Lehigh and New York branch from Freeville to North Haven. This provides for a mid-day train each way between Cortland and Ithaca, a mid-day train from Freeville to Auburn with connection from Cortland to Ithaca, the readjustment of schedule between Auburn and North Fair Haven and the running of evening trains connecting at Freeville 25 and 30 minutes later. This schedule is to be put in effect on December 25, 1909. A summer schedule is also to be put in operation on June 1. The railway company is required to keep a record of the travel on each of the trains and report monthly to the commission. In the memorandum accompanying the case, written by Commissioner Olmsted, the commission expresses the hope that this disposition of a very difficult case will be

accepted by both parties to the controversy in good faith and with good feeling, and that a resumption of the cordial relations between the railway and the people of Auburn cannot but lead to the results most desired by both parties that to the railway will come increased business and to the people the additional facilities both for freight and passenger traffic which are certain to follow.

## COURT NEWS.

At the federal court at Catlettsburg, Ky., December 17, the grand jury returned indictments against the Van Leunen Co., of Cincinnati, for having carloads of hay transported by the Louisville & Nashville at less than tariff rates.

The Texas court of civil appeals, in a decision handed down last week, holds invalid the law of that state, passed at the last session of the legislature, fixing eight hours as the maximum day's work for telegraphers. The court holds that this law conflicts with the federal statute on the same subject, which names nine hours. The decision confirms one handed down some time ago in Trinity county in a suit against the Texas & New Orleans Railroad.

The Leavenworth Terminal Railway & Bridge Co. has brought suit in the United States Circuit Court at St. Paul, Minn., to collect $280,000 from the Chicago Great Western Railway Co. This sum represents the annual rental of the bridge company's property from 1909 to 1925 under a 30-year lease made in 1895. On the reorganization of the Chicago Great Western Railway, the successor company, the new Chicago Great Western Railroad, abandoned the lease. Apparently the point that will have to be determined by the court is the liability of a reorganized company for the performance of contract entered into by its predecessor company. It will be noted, however, that the suit is brought against the old company and not against the new.

The New York State Court of Appeals, deciding a suit in connection with damages suffered by abutting property owners in Brooklyn, on account of the building of a subway in Joralemon street, in that borough, hold that the right of the city to build and operate the subway is proprietary and is not an attribute of its sovereignty; and therefore it is liable to abutting property owners the same as a railway company would be. The court says: There is a broad distinction between a municipal purpose and a street purpose. Highways are free and open to all the people, but no man may enter the subway or the cars that run through it without paying fare for the privilege. One of the abutters injured, Mr. Notman, did not own the fee in the street, and a more difficult question was presented. No part of Notman's land was taken, although his property suffered serious injury, and it is argued by the municipal authorities that he is not entitled to compensation, his loss helping forward the general good. The court holds that to sustain such a proposition would compel him to contribute indirectly a large sum toward the construction of a railway in which he has no greater interest than citizens generally, and sound public policy forbids that citizens in one part of the city shall be injured in order to benefit citizens in another part. The rule of evidence adopted by the commissioners is held to be erroneous. It limited witnesses in their estimates of value to the time when it was known that the subway was an assured fact by the filing of oaths, although the work had been begun, and excluded from consideration any physical damage which had actually been inflicted at the time of the trial when the work in front of the premises in question had been substantially completed. The test was what the market value would probably be if an intending purchaser knew that the road was to be built. This left everything open to conjecture, as is evidenced by the fact that the experts called by the different parties under the ruling of the commissioners estimated the depreciation in the value of the property as wide apart as 50 and 10 per cent. respectively. It is held that the commissioners should have received and considered evidence of all physical injuries inflicted upon the property by the proper construction of the work, so far as that could be ascertained at the date of the trial.

# Railroad Officers.

## ELECTIONS AND APPOINTMENTS.

### Executive, Financial and Legal Officers.

Harry Morris Sloan, assistant to fourth vice-president of the Chicago, Rock Island & Pacific at New York, whose election as vice-president and assistant to the vice-chairman of the executive committee was announced in our issue of December 17, page 1216, was born March 24, 1878, at Magnolia, Iowa. He graduated from the Logan, Iowa, high school in 1895 and began railway work August 11, 1898, as storeroom boy and storekeeper's clerk on the Fremont, Elkhorn & Missouri Valley, now a part of the Chicago & North Western. From November, 1899, to November, 1902, he was clerk and bookkeeper in the vice-president's office of the Chicago & North Western, at Chicago. In December, 1902, he entered the service of the Chicago, Rock Island & Pacific as clerk in the office of the comptroller at Chicago, and in November, 1904, was appointed chief clerk to comptroller. From January 1, 1905, to June 30, 1906, he was auditor of disbursements, and on July 1, 1906, was transferred to New York as assistant to the fourth vice-president, which position he held until his recent election as vice-president and assistant to vice-chairman of the executive committee.

H. M. Sloan.

Charles Heebner, assistant general solicitor of the Philadelphia & Reading, at Philadelphia, has been appointed general solicitor, succeeding J. D. Campbell, retired, effective January 1.

Frank Nay, whose appointment as comptroller of the Chicago, Rock Island & Pacific, with office at Chicago, was announced in the *Railroad Age Gazette* December 17, page 1216, was born April 19, 1861, near Columbus, Ohio. He received a high school education and taught school five years. He began railway work in April, 1883, as statistical clerk in the office of the general auditor of the Missouri Pacific. The following year he was made clerk on statistics and freight accounts in the accounting department of the Texas & St. Louis, now the St. Louis Southwestern, and three years later he was made traveling auditor. For ten years from January, 1889, he was chief clerk in the office of the general auditor, and in April, 1899, he was appointed auditor of the Minneapolis & St. Louis. Three years later his jurisdiction was extended over the Iowa Central. In April, 1903, he was made assistant

Frank Nay.

comptroller of the Chicago, Rock Island & Pacific system, and in November, 1904, he was made general auditor, which position he held until his recent appointment.

W. H. Burns, whose appointment as general auditor of the Chicago, Rock Island & Pacific, with office at Chicago, succeeding Frank Nay, promoted to comptroller, was announced in the *Railroad Age Gazette* December 17, page 1216, was born April 23, 1865. He received a common school and business college education, and began railway work in 1880 as clerk to the storekeeper of the Chicago, Rock Island & Pacific. He subsequently left that company to attend business college and in 1882 returned to engage in clerical work with the roadmaster. The following year he was made clerk in the office of the freight auditor, which position he held 15 years. He was then made freight auditor and was appointed auditor of freight traffic in July, 1902. In October, 1905, he was appointed assistant general auditor of the Rock Island Lines, from which position he has now been promoted to general auditor.

**W. H. Burns.**

The *Railroad Age Gazette* in its issue of December 10 published a sketch of F. O. Melcher, who has been elected second vice-president of the Rock Island lines, which contained several errors. Mr. Melcher was born June 14, 1864, at Damariscotta, Me. He graduated from the engineering department of Tufts College in 1887, and received the degree of civil engineer from this school in 1895. He began railway work in 1887 as instrument-man on the Fitchburg Railroad; he was later appointed assistant engineer and then chief engineer. In 1897 he was appointed division superintendent, and he was appointed general superintendent the following year. He was made superintendent of the Fitchburg division of the Boston & Maine in 1900, which position he held until November, 1902. From the latter date to February, 1904, he was superintendent of the Illinois division of the Chicago, Rock Island & Pacific. He was then made general superintendent of the Choctaw district, and in June, 1905, was appointed general manager of the Central and Northern districts. In December, 1906, his jurisdiction as general manager was extended over the rest of the C., R. I. & P. system.

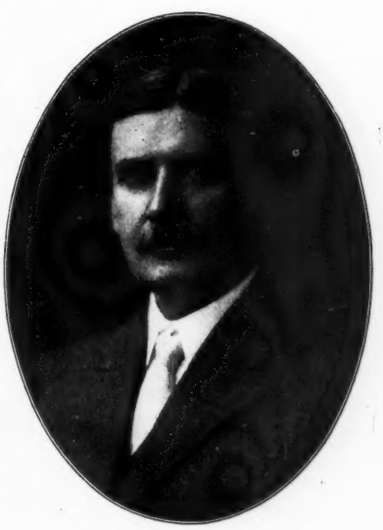
**F. O. Melcher.**

R. T. Railey, assistant attorney of the Missouri Pacific-Iron Mountain system at Harrisonville, Mo., has been appointed general attorney for Missouri, with office at St. Louis, Mo., succeeding M. L. Clardy, recently elected vice-president and general solicitor. J. F. Green has been appointed assistant to Mr. Railey. Henry G. Herbel, trial lawyer for the Gould Lines in St. Louis, and E. G. Merriam, formerly assistant to the vice-president and general solicitor, have each been appointed an assistant to the vice-president and general solicitor, with office at St. Louis, Mo. W. E. Hemingway, general agent in the executive department at Little Rock, Ark., has been appointed assistant to the vice-president and general solicitor, in charge of the legal department of the lines in Arkansas, with office at Little Rock, and E. Robinson, assistant attorney at Kansas City, Mo., has been appointed assistant to the general solicitor, with office at Kansas City.

E. B. Peirce, whose appointment as general solicitor of the Chicago, Rock Island & Pacific, with office at Chicago, was announced in the *Railroad Age Gazette* December 17, page 1216, was born August 14, 1868, at Kosciusko, Miss. He was educated at the University of Mississippi, and began railway work in 1890. He was to March, 1904, assistant to the general solicitor and attorney for Arkansas for the Choctaw, Oklahoma & Gulf. In 1904 that road was absorbed by the Chicago, Rock Island & Pacific, and Mr. Peirce was appointed attorney for the Rock Island for Arkansas. In October, 1906, he was appointed commerce counsel of the Chicago, Rock Island & Pacific and the St. Louis & San Francisco, from which position he has been promoted to general solicitor.

**E. B. Peirce.**

George H. Crosby, whose election as vice-president, secretary and treasurer of the Chicago, Rock Island & Pacific, with office at Chicago, was announced in the *Railroad Age Gazette*, December 17, page 1216, was born March 27, 1849, at Lawrence, Mass. He began railway work in August, 1870, as rodman on the Pennsylvania & Sodus Bay road, and was later made assistant engineer. In September, 1871, he was appointed assistant engineer of the Chicago & Southwestern, now a part of the Chicago, Rock Island & Pacific, and in March, 1872, he went with the Chicago, Rock Island & Pacific proper, where he acted consecutively as freight and ticket clerk, passenger agent, traveling agent and traveling auditor. In September, 1880, he was made freight auditor, which position he held 18 years, and he was then elected secretary. In April, 1903, he was appointed treasurer also, which position he held until his recent promotion.



**G. H. Crosby.**

W. H. Elmendorf has been appointed assistant auditor of the Lake Erie & Western. A. W. Wilmington has been appointed auditor of freight accounts, and F. W. Ranney has been appointed auditor of passenger accounts.

George M. Glazier, assistant auditor of the Lake Shore & Michigan Southern at Cleveland, Ohio, has been appointed auditor of that company, also of the Chicago, Indiana & South-

ern, the Lake Erie, Alliance & Wheeling, the Indiana Harbor Belt and the Mahoning Coal Railroad, with office at Cleveland, succeeding Richard M. Huddleston, promoted.

J. J. Campion, traffic manager of the Carolina, Clinchfield & Ohio at Johnson City, Tenn., has been elected vice-president, in charge of traffic, with office at Johnson City.

Richard M. Huddleston, auditor of the Lake Shore & Michigan Southern at Cleveland, Ohio, has been appointed general auditor of the New York Central lines west of Buffalo, N. Y., with office at Chicago.

James E. Gorman, whose election as first vice-president in charge of the freight traffic department of the Chicago, Rock Island & Pacific, with office at Chicago, has been announced in these columns, was born December 3, 1863, in Chicago, and received his education at Holy Family school in that city. He began railway work in August, 1877, as a car number taker on the Chicago, Burlington & Quincy, and during the following 16 years held various clerical positions with the Burlington, the Chicago, Rock Island & Pacific, the Chicago & North Western, the Chicago, Santa Fe & California, now a part of the Atchison, Topeka & Santa Fe; the Illinois Central and the Atchison, Topeka & Santa Fe, and also with the Chicago Lumber Company. He was appointed traffic manager of Joy Morton & Company in December, 1893, and in March, 1895, was made chief clerk to the traffic manager of the Atchison, Topeka & Santa Fe. Six months later he was appointed assistant general freight agent, which position he held four years. He was then made general freight agent, and in April, 1904, was appointed assistant freight traffic manager. He was appointed freight traffic manager in March, 1905, which position he held until his recent election.

J. E. Gorman.

### Operating Officers.

A. T. Dice, general superintendent of the Philadelphia & Reading and subsidiary lines, at Reading, Pa., has been appointed general manager, and his former position has been abolished.

S. E. Burkhead having resigned as assistant superintendent of the International & Great Northern at Palestine, Tex., that office has been abolished, and W. E. Miller has been appointed trainmaster of the Gulf division, with office at Palestine.

J. Q. Matthews has been appointed assistant superintendent of the Colorado division of the Union Pacific, and W. F. Larimer has been appointed chief despatcher of the Colorado division, succeeding E. A. Hackett, resigned, both with offices at Denver, Colo.

O. D. Lewis, chief despatcher of the Kansas City and Ash Grove districts of the St. Louis & San Francisco at Ft. Scott, Kan., and E. L. Magers, chief despatcher of the Afton and Parsons districts of the Northern division at Ft. Scott, have been appointed assistant superintendents, with office at Ft. Scott, and will have jurisdiction over their respective territories. C. F. Hesser succeeds Mr. Lewis and W. I. Kipp succeeds Mr. Magers.

### Traffic Officers.

F. D. Comstock, commercial agent of the Kanawha Despatch, with office at Peoria, Ill., has resigned.

F. R. Fisher has been appointed a traveling passenger agent of the Illinois Central, with office at Cincinnati, Ohio.

John E. Harrington has been appointed a commercial agent of the Louisiana & Arkansas, with office at Sherevport, La.

S. Richardson, agent of the Wabash at Moulton, Iowa, has been appointed commercial agent, with office at Ottumwa, Iowa.

P. A. Marr, traveling passenger agent of the Illinois Central at Cincinnati, Ohio, has been transferred to Cleveland, Ohio.

J. C. Collins, secretary and auditor of Bartlett-Florence Railway, at Bartlett, Texas, has been appointed traffic manager, with office at Bartlett.

T. P. Stabler, traveling freight agent of the Cleveland, Cincinnati, Chicago & St. Louis at Dayton, Ohio, has been appointed a contracting agent, with office at Dayton.

Eugene Fox, assistant general freight agent of the El Paso & Southwestern and the Morenci Southern at El Paso, Tex., has been appointed general freight and passenger agent, with office at El Paso, succeeding A. N. Brown, promoted.

James Webster, general freight agent of the New York, Chicago, & St. Louis at Cleveland, Ohio, and W. A. Terry, general freight agent of the Pittsburgh & Lake Erie at Pittsburgh, Pa., have each been appointed an assistant freight traffic manager of the New York Central Lines, with office at Chicago. J. B. Nessle, assistant general freight agent of the Pittsburgh & Lake Erie at Pittsburgh, succeeds Mr. Terry.

J. E. Bostick has been appointed general traveling agent of the Lackawanna Line, with office at Chicago, succeeding W. N. Cavan, resigned. T. J. McGeoy, agent at Memphis, Tenn., has been appointed agent at St. Louis, Mo., succeeding C. J. Chisam, resigned, and C. Bourne, Jr., succeeds Mr. McGeoy. Mr. McGeoy will exercise general supervision over all southern traffic solicited by the St. Louis and Memphis agencies.

L. M. Allen, whose appointment as passenger traffic manager of the Chicago, Rock Island & Pacific was announced in the *Railroad Age Gazette*, December 10, page 1170, was born July 4, 1863, at Davenport, Iowa. He began railway work in 1881 as a clerk in the office of the car accountant of the Chicago, Rock Island & Pacific at Davenport, and was then consecutively freight clerk and cashier, ticket clerk, ticket agent and general agent in the passenger department. In December, 1898, he was made assistant general passenger and ticket agent at Chicago, which position he held four years. He was then appointed general passenger agent of the lines east of the Missouri river, and in May, 1903, his jurisdiction was extended over the entire Rock Island system, from which position he was promoted recently to passenger traffic manager of the Chicago, Rock Island & Pacific, with office at Chicago, succeeding John Sebastian, elected vice-president.

L. M. Allen.

J. F. Vallery, general agent of the Chicago, Burlington & Quincy at Denver, Colo., has been appointed general agent in the freight department of that road and of the Colorado & Southern, effective January 1, when the local offices of these roads at Denver will be consolidated. E. A. Cooper, city passenger and ticket agent of the Colorado & Southern at Denver,

has been appointed general agent in the passenger department, and L. C. Zimmerman, commercial freight agent of the Colorado & Southern, has been appointed assistant general agent of the freight department of both roads, all with office at Denver.

R. B. Miller, general freight agent of the Southern Pacific Lines in Oregon, the Oregon Railroad & Navigation Company, the Oregon & Washington, the Corvallis & Eastern and the Ilwaco Railroad, at Portland, Ore., has been appointed traffic manager of the Oregon Railroad & Navigation Company and the Oregon & Washington and retains his office as general freight agent of the other lines, with office at Portland. W. E. Coman, assistant general freight agent of the Southern Pacific Lines in Oregon, the Oregon Railroad & Navigation Company and the Oregon & Washington at Portland, has been appointed general freight agent of the Oregon Railroad & Navigation Company and retains his office as assistant general freight agent of the other lines, with office at Portland. W. D. Skinner, assistant general freight agent of the Southern Pacific Lines in Oregon, the Oregon Railroad & Navigation Company and the Oregon & Washington at Portland, has been appointed general freight and passenger agent of the Oregon & Washington, with office at Seattle, Wash. F. W. Robinson, chief clerk to the traffic director of the Harriman Lines at Chicago, has been appointed assistant general freight agent at Portland, succeeding Mr. Skinner.

### Engineering and Rolling Stock Officers.

W. G. Massenburg, chief engineer of the Gulf & Interstate at Galveston, Tex., whose appointment as division engineer of the Gulf, Colorado & Santa Fe, with office at Beaumont, Tex., has been announced in these columns, will act as a joint employee of both companies.

S. W. Massey, roadmaster of the San Luis division of the National Railways of Mexico at San Luis Potosi, Mexico, has been transferred to the Mexico Queretaro division, with office at San Luis Potosi. It was erroneously stated in these columns November 26 that he had resigned.

H. M. Stone, district engineer of the Northwestern district of the Chicago, Rock Island & Pacific at Cedar Rapids, Iowa, has been transferred to the Southwestern district, with office at Topeka, Kan., succeeding J. G. Bloom, resigned to go into other business. Roy Johnson succeeds Mr. Stone, with office at Cedar Rapids.

Wm. Hood, chief engineer of the Southern Pacific, with office at San Francisco, Cal., has had his jurisdiction extended over the Gila Valley, Globe & Northern, the Maricopa & Phoenix, the Phoenix & Eastern, the Arizona & Colorado and the Arizona Eastern. L. H. Long, chief engineer of the Southern Pacific Railroad in Mexico, with office at Tucson, Ariz., has been appointed also assistant chief engineer of the above roads.

## OBITUARY.

Dr. Charles B. Dudley, chief chemist of the Pennsylvania Railroad, died of typhoid pneumonia at his home in Altoona, Pa., on December 21, at the age of 68. Dr. Dudley was born July 14, 1842, at Oxford, N. Y., and was educated at Oxford academy and Yale university, graduating from the Sheffield scientific school of the latter college in 1874, when he was given the degree of Ph.D. After graduation he became assistant to professor of physics in the University of Pennsylvania at Philadelphia for one year, and in 1875 became chemist for the Pennsylvania Railroad. Dr. Dudley was probably one of the most prominent scientists in the country, and his work in connection with the testing of materials is well known in the railway world. He was president of the American Chemical Society, a member of the Iron and Steel Institute, president of the American Society for Testing Materials, and was elected president of the International Association for Testing Materials at its recent meeting at Copenhagen. He was president of the Bureau of Explosives of the American Railway Association and chairman of the committee on the safe transportation of explosives and other dangerous articles.

# Railroad Construction.

### New Incorporations, Surveys, Etc.

ARNPRIOR & PONTIAC (ELECTRIC).—An officer writes that the projected route is from Campbells bay, Quebec, via Chats Falls and Graham's bay, near Ottawa, Ont., to High Falls, 75 miles. Arthur H. Brice, chief engineer, Ottawa.

BALTIMORE & OHIO.—An officer writes that there is no truth in the reports that double-tracking will be carried out between Fairmont, W. Va., and Connellsville, Pa. No big improvement work is under way except on the double-track bridge under construction over the Susquehanna river at Havre de Grace, Md., which will be completed early in January, 1910.

BATON ROUGE & GULFPORT.—Organized in Mississippi to build from Baton Rouge, La., through Pearl River county to Gulfport, Miss. Work is to be started at once. W. H. Louisell and T. M. Stevens, Mobile, are said to be back of the project.

BUFFALO, LOCKPORT & ROCHESTER (ELECTRIC).—According to press reports this company is planning to double-track its line between Rochester, N. Y., and Lockport. The company makes direct connection with the International Railway for Lockport and Buffalo.

BUFFALO, ROCHESTER & PITTSBURGH.—An officer writes that a contract has been given to D. J. Carson, Dubois, Pa., for grading work on the main line, on three miles near Parkwood, Pa.; also on two miles near Clarksburg, Pa.

CANADIAN NORTHERN.—According to press reports the Saskatchewan government has guaranteed bonds for new lines to be built during 1910, as follows: Regina, Sask., west to Moose Jaw, paralleling the Canadian Pacific, and another from Regina west to Calgary, Alb.

CANADIAN ROADS.—The report of the engineers for the proposed line from the Pass, Kew., north to a point on Hudson bay, is said to recommend that the line be extended to Fort Nelson instead of to Fort Churchill, as a line to the former can be built with better grades and for about $2,682,332 less than to Fort Churchill.

CHICAGO, JOLIET & ST. LOUIS (ELECTRIC).—Under this name a company is said to have been organized at Springfield, Ill., with a capital of $100,000, to take over a number of existing electric lines and complete a through line from Chicago southwest via Joliet, Pontiac, Bloomington, Springfield, Virden, Litchfield and Edwardsville, to East St. Louis. Most of these places are now connected by single-track electric lines, excepting a few miles between Pontiac and Bloomington. Arrangements are said to have been made to enter Chicago over the tracks of the Metropolitan West Side Elevated to the Fifth avenue station. The incorporators include: H. A. Fisher, of the Joliet & Southern Traction; F. E. Fisher and Lee Fisher, Joliet; S. A. Spry, of the John Spry Lumber Co., Chicago; T. B. Stewart, J. M. Raymond and J. K. Newhall, all of Aurora.

CINCINNATI, HAMILTON & DAYTON.—According to press reports plans are being made to double-track this road between Lima, Ohio, and Piqua.

EPHRATA & LEBANON (ELECTRIC).—Incorporated in Pennsylvania, with $425,000 capital, to build 22 miles in Lancaster county, Pa. D. B. Erb, president, Ephrata. The incorporators include: M. Kinport, R. Stine, Ephrata; S. S. Hamenstine, M. H. Shirk and H. B. Hollinger, Lincoln; A. E. Lane, Clay; H. Bennetch and U. B. Horst, Schaefferstown.

GEORGIA, FLORIDA & ALABAMA.—An officer writes that surveys are being made for an extension from Kimbrough, Ga., to Richland, six miles. (Sept. 10, p. 477.)

GREAT NORTHERN.—According to press reports work is to be started at once by the Vancouver, Victoria & Eastern on two sections of new lines, one from a point on the Frazer river, B. C., to Hope, and the other from Princeton west to Tulameen. Bids are said to have been asked for the work. This does not include a section of eight miles over the Hope mountains, where it will be necessary to pierce a long tunnel or

build about 25 miles of line over the mountains with steep grades.

Gulf Coast & Provident.—Organized to operate lines in Texas through Wharton, Lavaca and Colorado counties. Application will be made at once for a charter. The incorporators include: E. Reinbold, president; T. J. Coughlan, first vice-president, both of Kansas City, Mo.; Carey Shaw, second vice-president and general manager.

Idaho & Washington Northern.—Train service has been extended from Usk, Wash., north to Ione, 34 miles.

Kansas-Colorado (Electric).—An officer writes that contracts are being let for work on this line, now building from Pueblo, Colo., northwest to Canon City, 40 miles. There will be one steel bridge. W. S. Fallis, president, Commercial building, Kansas City, Mo.; A. T. Young, chief engineer, Pueblo, Colo. (Sept. 17, p. 520.)

Mexican Roads.—The Mexican Petroleum Co., Los Angeles, Cal., is said to be planning to build a narrow gage line to connect its oil fields near Tuxpam, Vera Cruz, Mexico, with the gulf port of Tampico. E. L. Doheny is the principal promoter.

The Chapala Hydro Electric & Irrigation Co., Guadalajara, Mex., has plans made to build an electric line to connect Guadalajara with Chapala, on the northern shore of Lake Chapala, about 32 miles. Emilio Pinzon, manager.

Missouri, Oklahoma & Gulf.—This road has been extended from Tupelo, Okla., southward to Wapanucka, 16.6 miles. Train service is expected to be in operation south to Durant by January, 1910.

National Railways of Mexico.—Bids are being asked, it is said, by this company for the construction of about 62 miles of line from the city of Durango to Llano Grande, in the state of Durango. The line is to be built under a contract made between the government of Durango and the Sierra de Durango Lumber Co. through an extensive mineral and timber section. The cost is estimated at about $2,000,000 gold. (Sept. 6, p. 564.)

Nevada Copper Belt.—An officer writes that work is now under way by P. J. Conway, Sweet Water, Tex., building from Mason, Nev., to Douglas mine, 20 miles. Track has been laid from Mason to Wabuska. G. M. Fraser, superintendent, Mason. (Oct. 15, p. 726.)

New York Roads (Electric).—A company is being organized by residents of Long Island to build an electric line across the island from Islip, N. Y., north through Central Islip and Smithtown to Stony Brook Harbor and Port Jefferson, about 25 miles. It is intended to eventually extend the line on the southern end to the Great South bay. D. M. McLaughlin, president of the Windsor Land & Improvement Co., is said to be interested.

Norfolk & Southern.—The Pinetown cut-off between Bishops Cross, N. C., on the Belhaven branch, and Pinetown, on the Pamlico division, has been open for traffic since November. The new line reduces the distance between Belhaven and Washington or New Bern, 34 miles.

Norfolk & Western.—This company has secured funds, which will be used for double-tracking the line in Ohio and to make other improvements.

The Big Stony Railway has been completed from Interior, Va., northeastward to Paintbank, 27 miles.

Northern Pacific.—Plans said to be made by the Toppenish-Simcoe & Western to build from Toppenish, Wash., southwesterly through the Yakima Indian reservation and through Klickitat county to Lyle, 90 miles. F. A. Williams, president, Toppenish. (July 16, p. 126.)

Northwestern Pacific.—An officer writes that about 26 miles of extensions will be built in 1910. Contracts were let recently to the Warren Improvement Co., San Francisco, Cal., for work from Willits north on three miles, to Willett & Burr, San Francisco, from the end of this contract north to mile 13, ten miles, and to the same contractors from Shively south on 13 miles. The work will be heavy. The maximum ascending grade will be $^{7}/_{10}$ per cent. going south and $^{3}/_{10}$ per cent. going north. The maximum curvature will be 10 deg. The work includes a number of short tunnels, several steel bridges, besides three crossings of Eel river from 500 to 800 ft. each in length. This is part of the work on the extension of the present line from Willits, Mendocino county, north to Shively, Humboldt county, 105 miles. An extension is also projected from Healdsburg northwest to Christine, 62 miles. (Dec. 17, p. 1214.

Ocean Shore.—See this company under Railroad Financial News.

Oregon Railroad & Navigation Co.—Train service has been extended 11.16 miles from Dayton, Wash., northeastward to Turner.

Pacific Coast.—The new line from Suey junction, Cal., to Garey, 9.4 miles, has been opened for business.

Richmond & Chesapeake Bay (Electric).—The charter of this company is to be amended to permit building an extension from its present terminus at Ashland, Va., to Alexandria.

Rome & Osceola.—An officer writes that on the first section of this line building from Rome, N. Y., north to Osceola, 25 miles, grading has been finished on three miles. W. P. White, president, Utica. (Oct. 1, p. 614.)

Rutland, Toluca & Northern.—Recently incorporated in Illinois as the successor of the Toluca, Marquette & Northern. The officers are: D. A. Moulton, L. E. Gary, N. J. Ford, G. E. Summers and W. H. Botham, all of Chicago.

Sewell Valley.—An officer writes that all grading has been finished to complete an extension to Raine, W. Va., four miles. J. M. Raine, chief engineer, Meadow Creek, W. Va. (Oct. 1, p. 614.)

Sonora Central.—According to press reports from Hermosillo, Mex., this company, organized some time ago to build 120 miles through the Sahuaripa mining district of Sonora, Mexico, is completing financial arrangements and expects to begin work early in 1910. The proposed route is from Toniche on the Yaqui river extension of the Southern Pacific to Maracaibo pass near the Chihuahua line. G. W. Sanderson, chief engineer and general manager. (April 2, p. 775.)

Southern Utah.—An officer writes that work is now under way by C. L. Crandall, Provo, Utah, on an extension from Castle Junction to Mohrland, eight miles. (Oct. 8, p. 663.)

Temple & Northwestern.—Residents of Temple, Tex., are said to have raised funds and surveys are to be begun early next year for a line from Temple north towards Hamilton.

Toluca, Marquette & Northern.—See Rutland, Toluca & Northern.

Toppenish-Simcoe & Western.—See Northern Pacific.

Vancouver, Victoria & Eastern.—See Great Northern.

Virginia & Carolina Southern.—This road has been opened for traffic between Hope Mills, N. C., and Lumberton, 27 miles. (March 19, p. 659.)

Western of Georgia.—This company was incorporated in Georgia early in 1909 to build 60 miles of line from near Aberdeen, Ga., west via Noonan and Franklin to the Alabama-Mississippi boundary. Contract was let last June to Ira L. McCord & Co. to build from Aberdeen to Franklin, 35 miles. The company proposes to issue bonds to secure money for building the line. I. N. Orr, president; M. F. Cole, vice-president and general manager, and W. C. Wright, secretary, Noonan. (May 7, p. 1008.)

Wichita Falls & Northwestern.—See Wichita Falls Route.

Wichita Falls Route.—The Wichita Falls & Northwestern has been extended from Altus, Okla., northwest to Mangum, 19.8 miles.

Winston-Salem Southbound.—An officer writes that contracts have been let and work is now under way by the Reinhart & Dennis Co., Washington, D. C.; E. G. Nave Co., Portsmouth, Ohio; E. Purcell & Co., the J. T. McKinney Co., Lynchburg, Va.; The Luck Construction Co., Roanoke; the Ferguson Contracting Co., New York; Walton & Co., Falls Mills; the McCurry Construction Co., Marion, N. C.: McDowell & Co., Knoxville, and J. T. Bennett, Danville. The line is being built from Winston-Salem south to Wadesboro, 88 miles. O. H. P. Cornell, chief engineer, Winston-Salem. (Aug. 20, p. 339.)

# Railroad Financial News.

ANN ARBOR.—This company has taken over the Manistique & Lake Superior, the main line of which runs from Manistique, Mich., to Shingleton, 40 miles. President Zimmerman, of the Ann Arbor, is quoted as saying that a car ferry will be operated between Frankfort, the terminus of the Ann Arbor on Lake Michigan, and Manistique, the terminus of the M. & L. S. (Aug. 27, p. 386.)

ATLANTA & CHARLOTTE AIR LINE.—See Southern Railway.

CHICAGO GREAT WESTERN.—See an item in regard to this company under Court News.

CHICAGO, MILWAUKEE & ST. PAUL.—The larger part of the $25,000,000 general mortgage 4 per cent. bonds taken recently by Kuhn, Loeb & Co. and the National City Bank, both of New York, and offered by them to the public at 100½, have been sold and the price of offering by the bankers has been advanced to 101½.

CHICAGO, ROCK ISLAND & PACIFIC.—The price paid for the $28,940,300 St. Louis & San Francisco common stock recently sold by the C., R. I. & P. to B. F. Yoakum, Edwin Hawley and associates was, it is said, 37½, making a total payment of $10,842,000. The stock was deposited under $17,364,180 C., R. I. & P. company collateral trust 5 per cent. bonds, which have been called for redemption at 102½, which makes the total amount necessary for their redemption $17,789,282. This makes a net loss to the Chicago, Rock Island & Pacific of approximately $7,000,000.

DELAWARE RIVER RAILROAD & BRIDGE CO.—A semi-annual dividend of 4 per cent. has been declared on the $1,300,000 stock, all of which is owned by the Pennsylvania Railroad. In 1908 3 per cent. was paid semi-annually, and in June, 1909, a semi-annual dividend of 2 per cent. was paid.

FLORIDA RAILWAY.—This company, which has in operation a road from Perry, Fla., to Live Oak, 52 miles, has filed a mortgage securing an issue of $4,000,000 bonds. See mention of this company under Railroad Construction.

GREAT NORTHERN.—The *Commercial and Financial Chronicle* says that this company has bought a controlling interest in the Spokane & Inland Empire, operating 247 miles. The Spokane & Inland Empire has outstanding $10,000,000 common and $6,311,500 preferred stock.

INTEROCEANIC OF MEXICO.—The directors of this company, which recently leased the Mexican Southern, have declared an annual dividend of 5 per cent. on the first preferred stock. This compares with 4½ per cent. paid in 1908. An initial dividend of 1 per cent. on the second preferred has been declared.

KANAWHA & MICHIGAN.—It is said that the directors have passed a resolution providing that 40 per cent. of all net earnings shall be considered a fund to be used by the directors for the benefit of stockholders. This is apparently in answer to the circular issued by representatives of the minority stockholders, an abstract of which was given in these columns last week.

LEAVENWORTH TERMINAL RAILWAY & BRIDGE CO.—See an item in regard to this company under Court News.

LOUISVILLE & NASHVILLE.—The directors have declared a semi-annual dividend of 3½ per cent., payable February 10, on the $60,000,000 stock. In 1908 the annual rate was 5 per cent.; in August, 1909, a semi-annual dividend of 3 per cent. was paid, advancing the stock to a 6 per cent. annual rate, and the present declaration places the stock on a 7 per cent. basis.

MAHONING & CHENANGO.—Lee, Higginson & Co., Boston, and Blair & Co., New York, are offering $3,800,000 first consolidated refunding mortgage 5 per cent. bonds of 1905-1916 of the Mahoning & Chenango at 97, yielding about 5⅝. The Mahoning & Chenango operates about 145 miles of electric railway, of which 53 miles are on private rights-of-way. The total authorized issue of bonds is $10,000,000, of which $5,598,000 are reserved to retire at par divisional bonds and $3,996,000 are outstanding, including the bonds now offered, leaving $406,000 issuable for future additions and improvements. The city railways of Youngstown, Pa., and New Castle are included in the system, and the interurban lines connecting these two cities and lines connecting Youngstown with Sharon and with Leavittsburg are also operated.

MANISTIQUE & LAKE SUPERIOR.—See Ann Arbor.

MISSOURI PACIFIC.—See an item in regard to this company under State Commissions.

NATIONAL RAILWAYS OF MEXICO.—The annual report (see comments in another column) says that the company has bought the stock of the Mexican International, held by the Southern Pacific Co., at last accounts, $4,172,100. The property of the Mexican International is to be transferred to the National Railways, and the road is to be operated as part of that system.

NEW YORK & PORTCHESTER.—See New York, Westchester & Boston.

NEW YORK, NEW HAVEN & HARTFORD.—See New York, Westchester & Boston.

NEW YORK, WESTCHESTER & BOSTON.—The New York Public Service Commission, Second district, has granted the application of this company and of the New York & Portchester to consolidate their capital stock, property and franchises. The capital stock of the consolidated company is not to exceed $5,000,000. The Westchester road and the Portchester road are subsidiaries of the New York, New Haven & Hartford.

NORFOLK & WESTERN.—This company has sold to Kuhn, Loeb & Co., New York, at a price said to be about par, the $1,530,800 common stock heretofore held in the treasury. The total stock outstanding, including this stock just sold, is $66,000,000. See this company under Railroad Construction.

OCEAN SHORE (ELECTRIC).—It is proposed to apply for authority to issue $2,000,000 receiver's certificates to carry on construction on the extensions. The coupons due November 1 on the outstanding bonds have not been paid.

PENNSYLVANIA RAILROAD.—See Delaware River Railroad & Bridge Co.

PITTSBURGH, CINCINNATI, CHICAGO & ST. LOUIS.—The directors have declared a semi-annual dividend of 2½ per cent. on the common stock, an increase of ½ per cent. semi-annually. The regular semi-annual dividend of 2½ per cent. on the preferred has been declared also.

ST. LOUIS & SAN FRANCISCO.—Arrangements have been made through Speyer & Co., New York, to sell to a syndicate of French bankers, headed by the Banque de l'Union Parisienne, $4,000,000 general lien 15-20 year 5 per cent. bonds of the St. Louis & San Francisco. This makes $43,000,000 of these bonds which have been taken by Speyer & Co. from time to time.

See Chicago, Rock Island & Pacific.

SAN PEDRO, LOS ANGELES & SALT LAKE.—The stockholders have authorized the issue of $60,000,000 bonds to retire the outstanding $40,000,000 bonds. (Nov. 5, p. 896.)

SOUTHERN PACIFIC.—See National Railways of Mexico.

SOUTHERN RAILWAY.—This company has arranged to sell sufficient first consolidated mortgage 5 per cent. bonds of 1894-1994 to J. P. Morgan & Co., New York, to provide for the retirement of $500,000 preferred mortgage 4½ per cent., $4,250,000 first mortgage 4½ per cent. and $750,000 income 4½ per cent. bonds of the Atlanta & Charlotte Air Line. J. P. Morgan & Co. are offering to buy up to and including January 3 these Charlotte Air Line bonds, giving in exchange first consolidated Southern Railway bonds. The selling price of the consolidated mortgage bonds is 111. Bonds of the Charlotte Air Line that are not exchanged for consolidated railway bonds will be paid for at par in cash on January 3 by J. P. Morgan & Co.

SPOKANE & INLAND EMPIRE.—See Great Northern.

WABASH.—The court of appeals has affirmed the decision of the lower courts that the Buffalo Terminal Association has the right to recover from the city of Buffalo the $901,000 paid for the Hamburg canal strip, together with interest, which would bring the total amount of the judgment to about $1,100,000.

# Late News.

*The items in this column were received after the classified departments were closed.*

According to press reports, the Lawton & Fort Sill (Electric) will issue bonds to secure funds to build from Lawton, Okla, via Fort Sill to Medicine Park. (Nov. 12, p. 943.)

Surveys are said to be under way for a branch for the Denver & Rio Grande from Chamita, N. M., following an old survey which is partly graded up the Chamita river, via Abiquiu to Elvado. Construction work is to be started next year.

Work is now under way by the F. H. Blodgett Co., Wheeling, W. Va., on the Hampshire Southern, from Glebe, southwest to Petersburg, 20 miles. An extension is projected from Petersburg to Franklin, 30 miles. William Trapnell, chief engineer, Romney, W. Va. (Oct. 15, p. 726.)

Stockholders of Wells-Fargo & Co. Express have approved the recommendation of the directors to increase the capital stock from $8,000,000 to $24,000,000. Stockholders are to receive a dividend of $300 per share, in accordance with the resolution adapted by the directors last week.

Work is now under way on an extension of the Southwestern, from Scotland, Tex., southwest to Archer City, about 10 miles. The company is planning to continue the extension in a southwesterly direction from Archer City. It is also probable that an extension will be built on the northern end. (Dec. 10, p. 1168.)

Manufacturers have filed a complaint with the Wisconsin Railroad Commission attacking the express rates to all points within the state. The complaint demands an average reduction in all express rates of from 60 to 70 per cent. A demand is made for a 15-cent minimum instead of a 40-cent minimum.

The United States Steel Corporation on January 10 is to pay to the Great Northern Ore properties royalties for the year 1909 which will aggregate $2,065,500, or 1.37 per cent., on the outstanding $150,000,000 Great Northern Ore certificates. In 1908 the payment amounted to 0.88 per cent., and in 1907 0.42 per cent.

The New York Central & Hudson River has plans made for remodeling the large Harlem passenger station on Park avenue from 125th to 126th street, New York, adding a new mezzanine waiting room and refitting the telephone and telegraph and ticket offices, and transferring the smoking room to the basement.

Locomotive firemen on the Chicago & North Western have been refused increased wages for firing the new big locomotives. These demands were separate from the general demands made by western firemen; they will be taken up again when the Western Federated Board of the Brotherhood of Locomotive Firemen and Enginemen meets in Chicago, December 28.

Charles L. Warriner, formerly local treasurer of the Cleveland, Cincinnati, Chicago & St. Louis at Cincinnati, recently arrested on a charge of embezzlement, has pleaded guilty and on Wednesday last was sentenced to six years' imprisonment. According to a statement of an officer of the company, the total amount taken from the treasury of the road was over $600,000.

Directors of the Pennsylvania Company have declared a semi-annual dividend of 5 per cent. The annual rate heretofore has been 7 per cent. The present declaration puts the stock on an 8 per cent. basis since the dividend declared in June each year is 3 per cent. The entire $60,000,000 stock of the Pennsylvania Company is owned by the Pennsylvania Railroad.

A contract is said to have been given by the San Diego & Arizona to the Robert Sherer Co. for grading an additional section of four miles, on which work is to be started at once. This includes some very heavy rock work, with cuts ranging from 30 ft. to 60 ft. deep. The contract calls for the completion of the work by April, 1910. E. J. Kallright, chief engineer, Union building, San Diego, Cal. (June 11, p. 1230.)

A press despatch dated Chicago, December 22, says that a collision with a heavy loaded freight car derailed a southbound Milwaukee passenger train on the Chicago & North Western. The wreck occurred just north of Waukegan. The despatch says that four persons are known to have been hurt, one probably fatally. According to the newspaper account, a freight car broke out of a northbound freight train and plunged across the southbound track in front of the passenger train.

The trunk lines and the roads in the Central Passenger Association have announced the usual reduced rates for merchants visiting New York between now and next April. From the trunk line territory there are 16 selling dates arranged in groups of four each, with a 15-day return limit, and from the central territory a similar number with a 30-day limit. The fare for the round trip is one and a half times the one way fare. The arrangements for validating the return portions of the tickets at New York have been modified so that the passengers will have to visit the office of the merchants' association only once.

## FOREIGN RAILWAY NOTES.

The plans and specifications, submitted by the director-general of ways and communications of Brazil, have been approved for the building of the first 24 miles of a railway from Curralinho to Eiamantina.

Baume & Marpent, of Moyaux, Haine St. Pierre, Belgium, are said to have been awarded the contract for the new road and railway bridge to carry the Egyptian state railways over the Damietta branch of the Nile, near Mansourah, Egypt.

About $20,000,000, it is said, is to be appropriated in the next Japanese budget for building a central railway station at Tokio, and for laying two additional tracks between Tokio and Yokohama, and for replacing light rails with heavier ones.

The Administracao dos Caminhos de Ferro do Estado, Lisbon, Portugal, is to let a contract January 17 for building the Stetubal to Garvao line and for the completion of the extension from Barreiro to Cacilhas; also for the building of the Portalegre Railway.

The executive authorities of the Argentine republic have been authorized to build a railway from the line of the Northeast of Argentine Railway near Apostoles, San Jose, passing through the district of Misiones to a point on the Brazilian frontier, and from here to the junction of the Parana and Iguazu rivers.

The Direzione Generale delle Ferrovie dello Stata Via Ludovisi, Rome, was to have let a contract recently for building the first 1¾ miles of the Sciacca-Ribera-Bivio, Greci-Porto Empedocle line. The award of this contract will possibly involve the buying of materials which may have to be obtained wholly or in part outside of Italy.

Minor C. Keith, vice-president of the United Fruit Co., New York, has made a contract with the Republic of Salvador for building a standard gage railway from Santa Ana, on the Salvador Railway, to the Guatemalan border. This line will be extended to Zacapa, Guatemala, on the Guatemala Northern Railroad, connecting Guatemala City with San Salvador. The line will be 160 kilometers long and will be completed in about 18 months. The completion of the line between Santa Ana and Zacapa will give rail connection with the capitals of Guatemala and Salvador. The Guatemala Northern Railroad was built by Minor C. Keith, Sir William Van Horne and General Thomas H. Hubbard. The Guatemala Central Railroad is controlled by General Hubbard and the Pacific Improvement Co., San Francisco, Cal.

# Supply Trade Section.

Guilford S. Wood, Chicago, writes that this company has sold 400,000 of its nipple end hose protectors and 1,000 monogram brackets.

The property, including real estate, buildings and equipment, of the Solid Steel Castings Co., Chester City, Pa., will be sold at receiver's sale on January 11, 1910.

The Isthmian Canal Commission will receive bids until January 10 on guy derricks and hoisting engines, steel castings, iron forgings, hoisting chain, brass tubing, cast iron pipe, etc. (Circular No. 548.)

The Pullman Co. has bought a site in Point Richmond, Cal., upon which it plans to build car repair shops, work to commence about March 1, 1910. The site includes 21 acres and is located just north of the Southern Pacific depot.

The D. & A. Post Mold Company, Three Rivers, Mich., advises that five railways are now using the D. & A. steel molds for concrete fence posts, and that the introduction of these molds with other companies is progressing very satisfactorily.

The Toledo-Massillon Bridge Co., Toledo, Ohio, is to enter the machinery field. The capacity of the plant is being doubled to furnish the necessary facilities for the manufacture of cranes, hoists, coal and ore handling bridges, and grab bucket machinery.

The Q M S Co. (Quincy, Manchester, Sargent), Plainfield, N. J., announces that on January 1 it will move its western office from 1775 Old Colony building, Chicago, to 738 First National Bank building. John C. Hoof will represent the company in the western territory.

The Carborundum Company, Niagara Falls, N. Y., has leased a store and basement at 26 West Broadway, New York, for the purpose of carrying a large stock of the different products of the company. The new store will be opened about January 15. This is in line with the general expansive policy of the company.

The Eppinger & Russell Co., New York, advise that in addition to its creosoting works at Long Island City, N. Y., the new plant at Jacksonville, Fla., is now completed and ready for operation. This latter plant is so located that rail and vessel shipments of creosoted timbers may be conveniently made to any destination.

The Chicago Bearing Metal Co., Chicago, is now in operation, and is ready to fill all orders for the following products: Journal bearings, locomotive bearings, manganese bronze castings, steam metal castings, automobile castings and electric brass castings. The special product of this company, Graphose Bronze Journal Metal, is said to be very satisfactory under heavy loads and high speed. The company's offices are at 400 Old Colony building, Chicago, and the factory is at the Union Stock Yards, Chicago.

Due to increased business and need for increased manufacturing facilities the Union Saw Co., Williamsport, Pa., manufacturers of high grade hand band and circular saws, is now building at Frackville, Pa., a new factory, which will provide 20,000 sq. ft. of floor space in the main building and 6,000 sq. ft. in the hardening and power departments. The company expects to have the new plant ready for operation by March 1, 1910, at which time the sales offices will also be moved to Frackville. Reference to saws made by this company was made in the *Railroad Age Gazette* of March 12, 1909, being the results of the demonstration in New York by E. W. Wilson, president of the company.

The O. M. Edwards Co., Syracuse, N. Y., writes that in addition to its extensive line of car window fixtures, metal car sash, trap doors and railway devices of special designs, it has recently added a complete line of hardware specialties, including refrigerator and ice house trimmings and padlocks. This new line of hardware includes cupboard catches, cupboard turns, transom catches, flush ring catches, cabin door hooks, sash locks, casement window fasteners, casement window adjusters, sash lifts, bar sash lifts, flush sash lifts, anti-window rattlers, coat and hat hooks, bathroom hooks, towel hooks, hand rail brackets, door pulls, drawer pulls, drawer knobs, mortise flush bolts, barrel door bolts, chain door fasteners, hinge hasps, refrigerator catches and padlocks.

The Railway Business Association announces appointment by President George A. Post of the following executive members, all of whom have accepted:

E. L. Adreon, vice-president, American Brake Co., St. Louis, Mo.
W. E. Clow, president, James B. Clow & Son, Chicago.
J. S. Coffin, president, Franklin Railway Supply Co., New York.
Oliver Crosby, president, American Hoist & Derrick Co., St. Paul, Minn.
Maj. John F. Dickson, president, Dickson Car Wheel Co., Houston, Texas.
W. C. Dodd, president, National Lock Washer Co., Newark, N. J.
Henry Elliot, president, Elliot Frog & Switch Co., East St. Louis, Ill.
Alba B. Johnson, vice-president and treasurer, Baldwin Locomotive Works, Philadelphia, Pa.
A. N. Kittredge, president, Barney Smith Car Co., Dayton, Ohio.
W. B. Leach, General Manager and Treasurer, Hunt-Spiller Manufacturing Corporation, Boston, Mass.
E. B. Leigh, president, Chicago Railway Equipment Co., Chicago.
W. H. Miner, president, W. H. Miner Co., Chicago.
Alfred A. Pope, president, National Malleable Castings Co., Cleveland, Ohio.
Col. H. G. Prout, vice-president, Union Switch & Signal Co., Swissvale, Pa.
J. H. Schwacke, manager and secretary, William Sellers & Co., Philadelphia, Pa.
James Vilas, treasurer, Buda Company, Chicago.
W. H. Whiteside, president, Allis-Chalmers Co., Milwaukee, Wis.
W. P. Worth, treasurer, Worth Bros. Co., Coatesville, Pa.

Henry M. Sperry, resident manager at New York for the General Railway Signal Co., Rochester, N. Y., on January 1 becomes sales manager for the same company, with headquarters at Rochester. He will have charge of the sales and advertising departments and installation work. In August, 1881, Mr. Sperry entered the service of the Pennsylvania Railroad as a member of the engineering corps, New York division. In 1887 he became supervisor of signals of this division, and it was during his administration that the line from Philadelphia to New York was changed from a two to a four-track road, which required the construction of a large number of interlocking plants. In December, 1891, he left the Pennsylvania Railroad to become general agent for the Johnson Railroad Signal Co., in which position he had general charge of block signaling on the New York Central & Hudson River. During the illness of the president and later of the general manager of the company, he was its acting manager. In June, 1894, he became signal engineer and agent for the National Switch & Signal Co., in charge of the Western district, during which time he designed and built the large 157-lever interlocking plant at Stateline, Ind., and the signaling installations of the Chicago Elevated railroads, the most important of which was that of the union loop. In January, 1899, he became signal engineer and agent for the Union Switch & Signal Co. at New York. While in this position he prepared plans and made a report on the reconstruction of the St. Paul union depot, St. Paul, Minn., which provided track facilities for 10 railways; also prepared the preliminary plans and method of signaling for the Interborough Rapid Transit Co., New York, subway

**Henry M. Sperry.**

division, and prepared plans and had charge of construction of signaling of the New York & Long Branch Railroad. In February, 1905, he became the consulting signal engineer for the Hudson Companies, New York, and prepared plans and reports covering the four tunnels under the Hudson river and the large terminal station at Church street, New York, which is designed to handle 60,000 passengers per hour. He was also at this time consulting engineer for the Kinsman Block System Co., New York. In February, 1906, he became resident manager for the General Railway Signal Co., which position he has held up to the time of his appointment as sales manager at Rochester. Mr. Sperry is a member of the American Society of Civil Engineers, American Railway Engineering and Maintenance of Way Association, Railway Signal Association, New York Railroad Club, Transportation Club, Railroad Club, Sons of the Revolution and treasurer of the Signal Appliance Association.

## TRADE PUBLICATIONS.

*Superheaters.*—The Power Specialty Co., New York, has just issued its 1910 Foster superheater catalogue. This superheater is fully illustrated in a number of detail and installation illustrations, which latter show its use with several types of stationary boilers.

*Pipe and Boiler Insulation.*—The H. W. Johns-Manville Co., New York, has just issued a small pamphlet on the subject of insulation of pipes and boilers. This pamphlet contains a number of illustrations of this company's sectional pipe coverings, with full descriptions of each.

*Hardware Specialties.*—The O. M. Edwards Co., Syracuse, N. Y., has just issued its catalogue D of hardware specialties, including car window fixtures, metal car window sashes, railway devices of special designs and other general hardware for use in car building. This company has just recently taken up this new line.

*Safety Valves.*—The Consolidated Safety Valve Co., New York, has recently issued a cloth-bound catalogue descriptive of Consolidated pop safety valves for locomotives and stationary use. The information secured from a large number of tests made by this company on the subject of safety valve capacity is included in this catalogue, which will be sent to any one interested.

## RAILROAD STRUCTURES.

Dayton, Ohio.—The People's Railway Co. is to build a power house 250 ft. x 180 ft. The cost is estimated at $125,000.

Havre de Grace, Md.—See Baltimore & Ohio under Railroad Construction.

Long Beach, Cal.—The Pacific Electric Company is to build a reinforced concrete station at an estimated cost of $135,000.

Lucerne, Pa.—According to press reports the Rochester & Pittsburgh Coal & Iron Co., which is the coal holding company for the Buffalo, Rochester & Pittsburgh, has started work on a large power plant and coal tipple, to be built at Lucerne.

Missoula, Mont.—Plans for the Chicago, Milwaukee & Puget Sound passenger station have been finished and returned to the Seattle offices. The building, as planned, is to be 44 ft. x 100 ft., two stories high, with a clock tower, 80 ft. high, as the principal feature of design.

Stockton, Cal.—The Atchison, Topeka & Santa Fe has established a division point at Stockton. It is not yet certain whether the arrangement will be made permanent, but property has been purchased and a petition presented to the city to close one street to make a site for a large freight depot.

Watervliet, N. Y.—According to press reports the Delaware & Hudson is securing land as a site for machine shops.

The expenditure of about $65,000 has been authorized on the final surveys for a railway from Alpasinche, Argentine, to a point on the Tinogasta line of the North of Argentine Railway.

# Equipment and Supplies.

## LOCOMOTIVE BUILDING.

*The Duluth & Iron Range* is in the market for eight consolidation and two Mallet locomotives.

*The Stearns Salt & Lumber Company* has ordered one locomotive from the Baldwin Locomotive Works.

*The Pennsylvania* has ordered 24 electric locomotives from the Westinghouse Electric & Manufacturing Co.

*The Staten Island Rapid Transit* is in the market for four simple eight-wheel, 16-in. x 24-in. locomotives, to weigh about 116,000 lbs.

*The Chicago & Alton* is said to have ordered three Mallet locomotives from the American Locomotive Co. This item is not confirmed.

*The Kansas-Colorado*, Commerce building, Kansas City, Mo., building from Pueblo, Colo., to Canon City, will buy motive power this spring.

*The Chicago & Western Indiana*, reported in the *Railroad Age Gazette* of December 3 as being in the market for 10 switching locomotives, has ordered this equipment from the American Locomotive Co.

*The Georgia, Southern & Florida*, as mentioned in the *Railroad Age Gazette* of December 17, has ordered two Pacific locomotives from the American Locomotive Co.

*General Dimensions.*

| | |
|---|---|
| Cylinders | 22 in. x 28 in. |
| Diameter of drivers | 72½ in. |
| Weight on drivers | 138,500 lbs. |
| Water capacity | 7,500 gals. |

*The Chicago, Burlington & Quincy*, as reported in the *Railroad Age Gazette* of November 12, has ordered 50 simple Pacific locomotives from the Baldwin Locomotive Works. Delivery is specified for February and March, 1910.

*General Dimensions.*

| | |
|---|---|
| Weight on drivers | 164,000 lbs. |
| Total weight | 240,000 lbs. |
| Cylinders | 25¼ in. x 28 in. |
| Diameter of drivers | 69 in. |
| Boiler type | Extended wagon top |
| Boiler, working steam pressure | 160 lbs. |
| Firebox, type | Radial stay |
| " length | 108⅛ in. |
| " width | 72¼ " |
| Grate area | 54.2 sq. ft. |
| Water capacity | 8,000 gals. |
| Coal capacity | 13 tons |

## CAR BUILDING.

*The Harriman Lines* are said to be asking bids on 2,000 steel underframe refrigerator cars. This item is not confirmed.

*The Cincinnati, Hamilton & Dayton* is said to be asking prices on 15,000 freight cars. This item is not confirmed.

*The Isthmian Canal Commission* will receive bids until January 4 on 250 all-metal air-operated dump cars. (Circular No. 549.)

*The Intercolonial* has ordered five coaches from the Preston Car & Coach Co. and 10 miscellaneous cars from the Silliker Car Co.

*The Duluth, Missabe & Northern* is said to have ordered 1,000 steel ore cars from a western car builder. This item is not confirmed.

*The Kansas-Colorado*, Commerce building, Kansas City, Mo., which is building a line from Pueblo, Colo., to Canon City, will buy cars this spring.

*The Duluth, South Shore & Atlantic* has ordered 300 forty-ton steel underframe ore cars from the American Car & Foundry Co., and is building 70 twenty-five-ton all-wood ore cars at company shops.

*The Duluth & Iron Range*, reported in the *Railroad Age Gazette* of September 17 as being in the market for 1,000 ore cars, is said to have ordered this equipment from a western car builder. This item is not confirmed.

*The Philadelphia & Reading*, reported in the *Railroad Age Gazette* of December 17 as being in the market for 2,500 box and gondola cars, has ordered 1,000 steel underframe box cars from the American Car & Foundry Co. and 500 steel gondola cars from the Cambria Steel Co.

*The New York Central Lines* have ordered 3,100 all-steel, side dump, 50-ton gondola cars from the American Car & Foundry Co., for 1910 delivery. These cars will be divided as follows: Michigan Central, 1,000; Big Four, 1,000; C. I. & S., 1,000, and Cincinnati Northern, 100.

*The New York Central Lines* have ordered in addition to that already mentioned, and for 1910 delivery, 40 all-steel baggage cars from the Standard Steel Car Co., and six all-steel buffet cars from the Barney & Smith Car Co. The allotment of these cars will be as follows: New York Central, 20 baggage and two buffet; Lake Shore & Michigan Southern, 10 baggage and two buffet, and Michigan Central, 10 baggage and two buffet.

*The Maine Central*, as reported in the *Railroad Age Gazette* of December 17, has ordered 100 fifty-ton all-steel gondolas and 100 forty-ton flat cars from the Standard Steel Car Co. The gondola cars will be 40 ft. long, 9 ft. 5½ in. wide and 4 ft. 4 in. high, inside measurements, and 40 ft. 8½ in. long, 10 ft. wide and 8 ft. 1¾ in. high, over all. The flat cars will be 40 ft. 6 in. long and 9 ft. 5 in. wide, over all measurements. The special equipment includes:

| | |
|---|---|
| Brakes | Westinghouse |
| Draft gear | Miner tandem |
| Trucks | Bettendorf |
| Wheels | Chilled iron |

## MACHINERY AND TOOLS.

The Pennsylvania Steel Co. has ordered a twin tandem gas blowing engine. The cylinders are 34 in. x 48 in.

The foundry tools and equipment of the Solid Steel Casting Co., Chester City, Pa., will be sold at receiver's public sale on January 11, 1910.

The Isthmian Canal Commission will receive bids until January 10 for wood boring machines, machinists' taps, track chisels, wrench jaws, files, tinner's shears, etc. (Circular No. 548.)

## IRON AND STEEL.

*The Brooklyn Heights Electric* is said to be asking prices on 1,500 tons of rails.

*The Delaware & Eastern* is said to be asking prices on 12,000 tons of heavy section rails.

*The Delaware & Hudson* is said to have ordered 8,000 tons of heavy section rail from the Bethlehem Steel Co.

*The New York, New Haven & Hartford* is understood to be asking bids for 400 tons of structural steel for pier sheds in New York.

*The Albany & Southern* is said to be receiving bids through J. G. White & Co., New York, for 18,000 tons of heavy section rails and 150 tons of bridge steel.

*The Republic Iron & Steel Co.* has ordered from the McClintic-Marshall Construction Co. 6,500 tons of structural steel for an open hearth plant at Heselton, Ohio.

*The Buffalo, Rochester & Pittsburgh* is said to have ordered 9,000 tons of heavy section rails, dividing the order between the Carnegie, Lackawanna and Bethlehem Steel Companies.

## SIGNALING.

The Rock Island has completed the installation of automatic block signals between West Liberty and Cedar Rapids on the Cedar Rapids Division, and within a short time will extend the installation to Linn Junction, a total distance of 41.2 miles, single track. All signals are of the upper quadrant type style "S," made by the Union Switch & Signal Company. There will be 58 three-position single-arm signals, 4 two-position single-arm and 2 two-position double-arm. There will be 23 switches protected by switch indicators, usually two at each switch to announce the approach of trains in each direction. Concrete battery wells are used as housing for the potash operating batteries. Wires are led from line to apparatus in cable. Circuits are polarized and in all other respects the installation is similar to that recently put in service on the Iowa division.

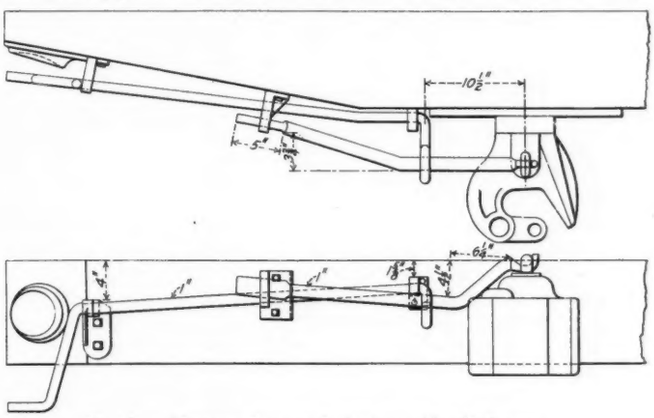
The Illinois Central is rebuilding the mechanical interlocking plant at Centralia. The machine, a Saxby & Farmer, has a 48-lever frame with 42 working levers. The distant signals are power-operated. Time locks are used on through routes. The plant is at a crossing of the Illinois Central and the C. B. & Q.

The Illinois Central is rebuilding the electric interlocking plant at Cairo Junction, Illinois. This is a 32-lever machine with 28 working levers made by the General Railway Signal Co. The plant is equipped with detector locking in addition to detector bars.

The Illinois Belt Railway Co. has just completed the rebuilding of the mechanical interlocking plant, the crossing of the Belt, the Santa Fe and the Alton at Le Moyne, Ill. The old plant contained 24 working levers; as rebuilt, there are 29 working levers, 3 spare levers and 8 spare spaces. Machine is of the Saxby & Farmer type.

### Duplex Uncoupler and Automatic Release.

Railways recognize the need of some means of preventing couplers from "pulling out." This causes heavy expense in the matter of end sill repairs and in many cases wrecks result from couplers falling on tracks. Many roads have included a release clause in their coupler specifications which has resulted in the embodying of this feature in the best M. C. B. types. The advantage, however, of this improvement in couplers cannot accrue to the railways unless the unlocking of the coupler is coincident with the detaching of it from its fastenings to the car and precedes the pulling out of the



Duplex Uncoupler and Automatic Release.

coupler shank to where the strap shoulders or buffing lugs bear against the end sill or carrier iron. Then the opportunity to unlock has passed, as it is recognized by those who have given this subject investigation that it is impossible to unlock the vertical plane coupler unless it is relieved from the tension incident to train pull.

In the absence of something better, the railways have been obliged to depend upon taking up the slack of the old style coupler lifting attachments in time to raise the lock, but the small chance of their doing so can be appreciated by any one who will measure the distance the coupler must pull out to take up this slack and compare it with the short distance from the coupler strap shoulder or buffing lug to the sill, as shown in the majority of modern applications.

Realizing that the improvement in couplers referred to is only one of two necessary to complete the automatic releasing of couplers in "pull outs," considerable attention has been devoted by inventors to the perfecting of a combined uncoupling and release apparatus which would complete the work begun by the coupler manufacturers. That success in this direction has been achieved is shown by the apparatus illustrated herewith, which combines the principles embodied in the Schroyer uncoupling apparatus (which we illustrated in the *Daily Railroad Age Gazette* of June 22, 1909), and certain further rights which have been acquired covering the automatic release feature.

The practicability of this invention has been tested by a large number of railways throughout the United States and Canada, the tests being made by applying the coupler with a

weak connection to the yoke, thus rendering it an easy matter to effect a "pull out" by a jerk of the locomotive.

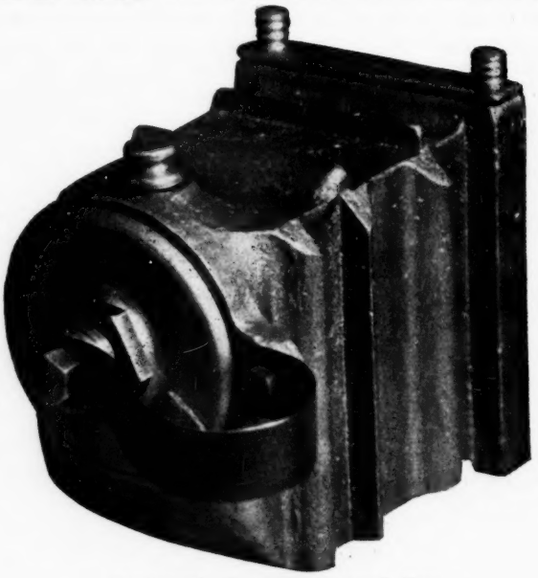
It will be seen that the device is so designed that when the coupler is pulled out the full limit (approximately 4 in. from sill) of the draft gear, the uncoupling lever bears in extreme forward end of the reach arm hook, thereby establishing a fixed point where the uncoupling lever attaches to the lock lifting pin. Also that the center line of the operating lever is applied 1½ in. higher than the center line of the uncoupling lever where the latter is intersected by the reach arm hook (see dimension A-A). At the instant of coupler detachment the coupler lock lifting pin receives a backward and upward pull (latter caused by the train pull bringing the operating lever and uncoupling lever to a common horizontal plane), these pulls being permitted free adjustment relative to each other by the pivoting of the reach arm hook in sill bracket. This results in a diagonal, backward lift on lock of approximately 45 deg., the most effective direction of pull in a release action.

The advantages claimed for the uncoupling device are: That it eliminates lifting attachments (links, clevises, etc.,) and makes a neat and permanent connection with the coupler lock lifting pin; the lateral play of coupler is provided for by the movement of the uncoupling lever in the center-bracket slot as shown; it increases leverage in the ratio of from 2 to 3 to 1, which leverage can be adjusted as desired; it can be operated from the ground or by the foot, as in the case of a switchman riding the train and making a running switch, and cannot cause accidental uncouplings by persons stepping on handle of operating rod when climbing between cars; the entire apparatus is below top of the end sill of car and cannot be disabled by shifting loads.

Opportunity to make practical demonstrations of both the uncoupling and the automatic release features of this device is solicited by the owners, the National Railway Devices Company, 490 Old Colony building, Chicago.

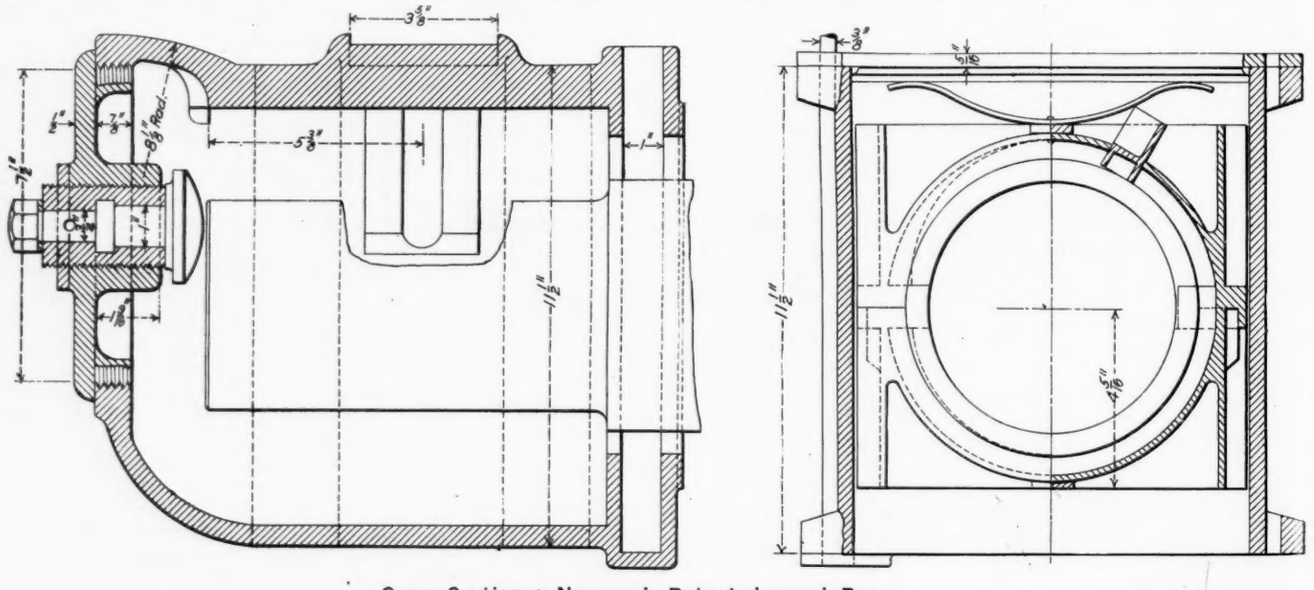
## The Newcomb Patent Journal Box.

Numerous efforts have been made to design a car journal box which will be tight enough to prevent leakage of oil and keep out dust. To meet these requirements a very tight joint at the lid and an efficient packing at the dust guard are necessary. The box here illustrated is one of the latest attempts to accomplish this purpose. It has been in service since July 30, 1909, and the packing has not been changed and the oil has been renewed but once. The boxes are run without any attention for a month at a time, and it is expected that at least 150,000 miles will be obtained from each bearing. On the other truck of the same car, equipped with the ordinary journal box, the wheels have been changed for cut journals, a number of bearings have been renewed and the packing has been changed six times since the improved box was put in. These boxes were tested on the Spokane, Portland & Seattle, where there is so much sand on the track that hot boxes on passenger cars are of frequent occurrence. The two new features of this journal box are the lid and the dust guard. It will be seen that the box lid is circular and it is screwed into the box. At the center of the circular lid is a large boss into which is fitted a screw bushing; on the inner end of this bushing is a bronze plug which serves as a bearing for the end thrust. This plug is adjustable by means of the bushing, which is fitted with a lock-nut on the outside. The hexagon bolt head at the end of the bushing is intended for turning the bushing for this adjustment. When the lid is loosened it is held in position by the steel spring. An important part of the patent on this box is the outside adjustable feature of the end thrust bearing. The dust guard, which is shown in detail,



Newcomb Patent Journal Box.

is made of malleable iron U-section and is in halves so that it can be placed and replaced without removing the wheels and axles from the truck. One half is put in from the top and the other from the bottom, and at the center there is a taper joint. This hollow frame can be filled with felt, paper, Babbitt or asbestos. After the guard is in place the top and bottom holes in the box are closed by caps $\frac{5}{16}$ in. thick, which are held in place by ⅜ in. bolts. The patents covering this device are owned and controlled by the Newcomb Patent Development Company, Sand Point, Idaho, and arrangements are now being made for the manufacture of these journal boxes at some place near Chicago.




Cross Sections; Newcomb Patent Journal Box.